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Fires

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May-June 08

› **Clash of Cultures:
Overcoming Branch
Biases is Key to Fires
CoE Success**
Expanding Opportunities

› **The Fires Brigade—
A Critical Capability**
Meeting the Army's
Needs

› **Fires for the 2007
Surge in Iraq:
Lethal and Nonlethal**
An Interview with
BG Mark McDonald

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Front Cover: SGT James Cleveland, C Battery, 5th Battalion, 7th Air Defense Artillery (ADA), 69th ADA Brigade, uses a hand crank to move a Patriot air defense system antenna into place before raising it to its operational position during a training exercise in Schweinfurt, Germany, 19 September 2007. (Photo by SSG John Queen, 69th ADA Brigade Public Affairs)

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ADA—A Time of Opportunity

By Major General Howard B. Bromberg, Chief of Air Defense Artillery

For nearly 1,000 years, warriors have been using Artillery to protect their borders and wage warfare. Soldiers in the Revolutionary War fought to claim freedom for our American soil using Artillery. Today, Field Artillery (FA) and Air Defense Artillery (ADA) are still protecting our nation. We are as relevant as ever and prepared to explode into the next era of warfighting.

As the new Chief of Air Defense Artillery and the Commanding General of Fort Bliss, Texas, I am excited to be returning to our Branch at such a pivotal time.

Currently, in addition to the everyday multiple efforts in support of the War on Terrorism (WOT), Soldiers and families, we are engaged in four equally important major lines of operations. The first is the establishment of the Branch at its new home at Fort Sill, Oklahoma, and the creation of powerful new capabilities for our Army as we build the Fires Center of Excellence (CoE). The second is the physical move of the ADA School, developmental activities and training base to Fort Sill. Third is the transformation of Fort Bliss to a Forces Command installation, ready to support the 1st Armored Division and other resident units. The fourth is the continuation of efforts to modernize and transform our air and missile defense (AMD) formations. We're executing all of this as we continue training troops and supporting WOT.

Creating the Fires CoE. Some are still skeptical as we begin our move to the new home of ADA; however, I see this as a time of tremendous opportunity to develop and grow tremendous warfighting capabilities. It is a once-in-a-lifetime chance to shape future warfighting capabilities, enhance leader development, field new weapons platforms and maximize the best of both Branches to provide the best fires capabilities for our Army.

Together, we are developing the foundation upon which the Artillery Soldiers of tomorrow will build. We are entrusted with the task of bringing greater synergy to the Branches and bringing up-to-date,

integrated strategies onto future battlefields. The centralization of training will make our forces more effective on the battlefield. Consolidating common training and doctrine development at one location will foster consistency, standardization and Soldier proficiency.

I'm very pleased to report that my teammate, Chief of Field Artillery, Major General Peter M. Vangel, and I are committed totally to ensuring success for each of you and our Army. While the changes won't be easy, we are reassured by the many talented and dedicated people working all day, every day, to make this transition as smooth and effective as possible.

On a recent visit to Fort Sill, I became even more optimistic about the move there. New state-of-the-art facilities to the tune of approximately \$1 billion are being constructed at Fort Sill. The renovation of 6th ADA Brigade's headquarters is scheduled for completion by this fall, and ground has been broken in preparation for construction of the 31st ADA Brigade's headquarters building. Cutting-edge training areas and simulators, personnel-support facilities, new homes and quality-of-life facilities are all well on the way. Most of all, the warm and welcoming attitude of the Soldiers and civilians who form both Fort Sill and the city of Lawton was tremendous.

Preparing for the Move. On the Fort Bliss side, our second line of operation, we will begin to move about 50 leaders to Fort Sill this summer to start smoothing the way for the transition. This team will work in concert with Fort Sill personnel to ensure issues that need to be resolved are fixed before the schoolhouse moves. They will lead the way for the roughly 1,000 Soldiers and civilians who eventually will run the ADA School at Fort Sill.

Although we talk about "the move" to Fort Sill, in actuality it consists of



23 moves. Each component is being examined separately to ensure that our course is mapped out down to each detail. These initiatives are to ensure that our Soldiers, civilians and families will have excellent quality of life upon arrival at Fort Sill and will be able to hit the ground running.

This is a time of opportunity for the ADA Department of the Army (DA) civilian workforce as well; many of whom will accompany us on our move. DA

...I see this as a time of tremendous opportunity to develop and grow tremendous warfighting capabilities.

civilians form the longevity and stability in Army training centers and offices and are integral to our success. I recognize that this is an especially difficult time for our DA civilians and their families as well. Selling a home, relocating, asking a spouse to search for new employment and pulling kids out of school—none of these decisions are easy to make.

I also understand there is anxiety about having to compete for jobs. Civilians should remember that a percentage of the ADA workforce will be retiring or choosing to stay in El Paso, Texas, rather than moving, so the actual pool of competition will not include every current ADA employee. There will be many positions available, and the reason for competing for them is to ensure we have the best possible staff at the Fires CoE.

More information about civilian hiring will be forthcoming as we get closer to

that stage of the process. Remember, each of you is a valued member of our team, and we greatly respect what you have done in support of our Branches, the Army and Soldiers. Without your dedication, we would not be able to achieve our status as the world's premier AMD force.

Transforming Fort Bliss. Our third major line of operation is the transformation of Fort Bliss. This transformation is only possible because of the great foundation laid by our previous Branch chiefs, who had the foresight to build the installation into a tremendous power-projection platform.

The Army's military construction effort on Fort Bliss currently is on target to deliver six brigade combat team (BCT) complexes. This is an unprecedented military construction project with more than \$5 billion invested to build infrastructure and facilities in support of an estimated troop population of 38,000. These facilities range from new barracks, company operations facilities and tactical maintenance facilities to state-of-the-art digital training ranges and a battle command training center.

Plans are underway for a lifestyle center that will include the expansion of the existing post exchange and the construction of a new commissary. The lifestyle center will incorporate retail areas with brand-name stores, casual dining and a six-screen cinema. There also will be a 165,000-square-foot fitness center with green space and walking areas for Soldiers and their families to gather and enjoy a small-town, "Main Street" environment on Fort Bliss. The lifestyle center's location will be within a short drive from on-post housing areas.

Additionally, more dental and medical facilities are underway, and Child and Youth Services is ramping up to increase quality-of-life capabilities and standards for inbound Soldiers and family members



The brigade combat team (BCT) construction development on Fort Bliss, Texas, will include infrastructure and facilities for six BCTs. (Photo courtesy of Office, Chief of Air Defense Artillery, Fort Bliss)

during the next four years. We don't have long to wait, either. Beginning this summer, Fort Bliss will receive one BCT per year through 2012.

Transforming the Branch. In addition to planning for the ADA School's transition, we're continuing our fourth line of operations—moving ahead on weapons development, modernization and the continued transformation of our formations.

The Terminal High-Altitude Area Defense (THAAD) modified table of organization and equipment has been approved, and the unit is forming now with Soldiers already signing into the battery. A Battery, 4th ADA Regiment, will begin training this spring, leading up to testing next year. Keep reading *Fires* Bulletin for more information on the status of THAAD.

Next year, our Branch leaders and Soldiers will execute a major portion of the Army and branch transformation. The 31st ADA Brigade will relocate to Fort Sill this summer, and after more than 30 years in support of US and NATO forces in Germany, the 69th ADA Brigade will relocate from Germany to Fort Hood, Texas. The 1st Battalion, 7th ADA (1-7 ADA), returns from its rotation in support of US Forces Korea and relocates to Fort Bragg, North Carolina, along with

the 108th ADA Brigade. Additionally, 3-2 ADA already has begun the move to Fort Sill, rounding out the 31st ADA Brigade's combat power.

Recently, Air and Missile Defenders have increased their role in support of WOT, supporting FA by filling 40 positions of the FA's captain-level military transition team (MiTT) assignments to Operations Iraqi Freedom and Enduring Freedom. This is an outstanding initiative that gives the FA Branch some relief for its captains experiencing an unusually high operational tempo and gives ADA captains some additional key experiences. ADA captains assigned to an FA MiTT will receive three weeks of training at Fort Sill on the duties and responsibilities of the fire support positions before reporting to Fort Riley, Kansas, for MiTT training. Patriot warrant officers also have been asked to support logistics MiTTs and will begin filling company-grade logistics officer shortages this fall.

We are on the cusp of a new era in Artillery capabilities. Army transformation and growth are vital for the strength of our Army, and we have an ideal opportunity to guide the future of our installations and Branches. All of the leaders, Soldiers, civilians and contractors taking part in these transitions are forming the legacy of ADA and Fort Bliss for years to come.

As we execute all of this and more, we continue to deploy Soldiers in support of combat operations. No matter where you are serving, your role is essential to the future of AMD. It truly is amazing what each of you and your units are accomplishing. Together, we can create the conditions for our success, and I'm confident in our ability to do so.

My personal respect and thanks goes out to all of you. With your support the future looks very bright and thanks, in advance, for a continued job well done.



Construction workers on Fort Sill, Oklahoma, lay foundations at the future home of Air Defense Artillery. (Photo by Keith Pannell, *the Cannoneer*, Fort Sill)

Feedback to "Green Tab to Green Tab Fire Support—The BCT Commander's Best Fires Asset"

I want to take this opportunity to personally thank each and every one of the almost 2,500 folks from all branches who provided valuable feedback to my column "Green Tab to Green Tab Fire Support—The BCT Commander's Best Fires Asset" in the March-April edition.

I've included a few excerpts (below) from the numerous and varied feedback submissions. It's important that we continue the dialogue with regard to fire support issues facing our great Branch.

Always remember that we enable the maneuver commander to dominate his area of operations through the coordination and delivery of lethal and nonlethal fires. Continue doing that for your branch and our Army.

Rest assured that your inputs were received "loud and clear," and we're working hard with the field to integrate them through training, doctrine and materiel developments. As those develop, I'll make sure that you're made aware of the changes.

Continue doing great things. Stay engaged and "in the know" as we transform. Come up on the net (<https://www.us.army.mil/suite/page/130700>) anytime and tell me how we can enable maneuver commanders to close with and destroy the enemy.

Anticipate—Integrate—Dominate! Artillery Strong!

Major General Peter M. Vangjel
Chief of Field Artillery (FA)

"I firmly believe that at a minimum, fire supporters should be task organized underneath the [headquarters] company/troop in garrison for focused fire support training [and] certification. I was a [company] FSO [fire support officer] in Afghanistan and have seen both sides (fire supporters with the Artillery in garrison and with maneuver). As a goal, we should go back to training and certifying under the supervision of the [direct support] Artillery [battalion] in the BCT [brigade combat team]. Post-deployment is an extremely busy environment with new equipment training and fielding, taskings, change of commands, quarterly training requirements, etc. Unless there is a [battalion] FSO in place in the maneuver [battalion], it is very easy for FIST [fire support team] certification to get kicked down the road."

Sergeant First Class
Afghanistan

"Maintaining branch specific mentoring will continue to be a challenge for all branches outside of Infantry and Armor. Developing the future broad-experience Artillerymen who will provide FA and ADA [Air Defense Artillery] counsel to the BCT commanders will be a challenge as well, especially with the types of missions all Soldiers and leaders are performing in Iraq (non-branch specific). It is imperative these junior and mid-grade officers do not miss the training and development window at this juncture in their careers."

Captain
Pentagon

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firesbulletin@conus.army.mil

"In over two years as a [squadron] FSO ..., I only went through one training session that was consolidated for all fire supporters. Standardization of procedures was very seldom discussed, and leader development from the [brigade] was severely restricted. Even less was given to us from the FA [battalion].

"In 2002, we were one of the first units to change over, and there was a lot of uneasiness about the role of the FA [battalion commander] with regards to the [fire support] personnel in the maneuver [battalions]. We encountered a lot of 'they are my guys now,' and the FA [battalion commander] was not able to reach out and train the other Artillerymen in the [brigade]. All [fire support] personnel moves had to be run through the [brigade commander] and [command sergeant major].

"On the other side, I have never felt so integrated with my maneuver brethren. I slept, ate and worked long hours with them. Once I had established myself as a knowledgeable professional along with them, any distinctions were lost, and I had no trouble getting [fire support] training on the calendar. But I believe a lot of this was because I had previous [fire support] experience as a [company] FSO. This article outlined exactly what is right and wrong at [brigade] level, and it filters down to every level."

Major
Fort Carson, Colorado

"One thing that concerns me and I think needs to be addressed: many of our field grade officers are not going to get the experience as an S3 or [executive officer] prior [to] being promoted to [lieutenant colonel] and serving as a [fire support coordinator]. This seems especially true for the '93 and '94 year groups. With the loss of the corps and division artillery headquarters, we lost a higher command that managed field grades. [Human Resource Command] now directly assigns majors to the BCTs and battalion commanders manage the [key developmental] positions. Many junior field grades are kept in [key development] positions for [three to four] years while deferring their attendance to [intermediate level education]. It is understandable that commanders want to keep the leaders they know and have confidence in, but it has created a large gap in experience."

Lieutenant Colonel
Fort Bragg, North Carolina

"If the FISTs are to remain in the maneuver [battalion] formations, which I believe they should, then there *must* be a consistent fire support training plan for all units in the BCT. That plan can be devised by the FA major on the BCT staff under the tutelage of the FA [battalion commander] and endorsed and enforced by the BCT commander. I would extend the thought to say that the FA [battalion commander] should also mentor the development of a mortar live fire safety policy for the BCT as well."

Captain
Fort Hood, Texas

Clash of Cultures: Overcoming Branch Biases is Key to Fires CoE Success



In the near future, the Fires Center of Excellence (CoE) at Fort Sill, Oklahoma, will meld the education and training of Air Defense Artillery (ADA) and Field Artillery (FA). This is good news for the Army for three main reasons: it will expand the skill sets of our Soldiers, NCOs and officers; it will advance the integration of our offensive and defensive systems and processes; and it will deliver a more capable force to our operational commanders.

Unifying Functions. What does that mean to the Air Defender? Does it mean that the ADA Branch is going away? Simply put, FA and ADA functions will endure as much as Infantry and Armor functions will endure when the Army stands up the Maneuver CoE.

However, we need a Branch that is organized, trained and equipped to fight determined adversaries who employ complex schemes in their operations. Can this best be accomplished by

By Lieutenant General
Kevin T. Campbell

missile defenses under a doctrine that prescribes integrating activities to defeat the threat—active and passive defense combined with attack operations integrated in an overarching command and control system. We need to apply the same principles to deal with the emerging UAV, rocket, artillery and mortar threat. Information operations (IO) and intelligence, surveillance and reconnaissance (ISR) operations play their roles; both IO and ISR are critical aspects of our battlefield campaigns. Arguably, today's target set is more complex and requires an even greater degree of integration across the battlefield operating systems.

In a functional context, we already have a Fires CoE—it is called the Army Air and Missile Defense Command.

an opportunity to build a broader set of skills. In turn, these skills open up assignment opportunities by integrating our Soldiers and leaders into the maneuver forces. Increased promotion opportunities should follow integration.

The Fires CoE will give the Army a Soldier whose portfolio enables him to serve in diverse positions throughout the Army where the Army has gaps and shortfalls. As a result, the Army will have a more effective ADA Soldier.

In a future described by the Chief of Staff of the Army as one filled with persistent conflict—conflicts in which adversaries will continue to introduce new tactics, techniques and procedures—can we afford to be “specialists?” I don't think so. We need Soldiers and leaders who have a skill set that spans a range of Army capabilities and that can bring to bear the full arsenal of our capabilities in an integrated manner. For example, an Air Defender was assigned last year as the Effects Officer for MultiNational Corps, Iraq. Perhaps we can build “fires-effects leaders.”

As we look to the future as Fires Soldiers and leaders, can we expect our leaders to command firing batteries, battalions and fires brigades? The answer is yes, absolutely, if we build a Fires CoE with sufficiently integrated functions.

However, we cannot achieve the full potential of an integrated Fires CoE if we cling to our familiar past. If we simply collocate two centers on one post, we will miss the opportunity to create a new class of Warrior.

Integrating and Networking Our Systems. Unifying our activities presents opportunities to expand on the vision

We have the capability within reach to integrate effectively. The challenge will be culture. If we can let go of our familiar lifeline and adapt, then we can leverage the strengths found in each Branch and begin to build new concepts, new architectures and a new class of Warrior.

separate FA and ADA Branches, or do we need a new Branch? The path we take should lead us toward unifying our action.

Expanding Opportunities. The threat—unmanned aerial vehicles (UAVs), rockets, artillery, mortars and ballistic missiles—requires a response that includes a combination of offense and defense, both kinetic and non-kinetic. We've operated our ballistic

We recognize the value in unifying our battlefield actions to defeat our determined adversaries. If you buy into the argument that it takes more than defense, then the Fires CoE holds promise for today's Air Defenders and the Army.

The threat drives Air Defenders to have a portfolio of skills that makes us more than we are today. The Fires CoE will provide ADA Soldiers and leaders



Photos show Air Defense Artillery Soldiers accomplishing the mission.



Major General Robert P. Lennox, former Chief of ADA, created for integrating our current and future systems. The vision is realized in the system-of-systems approach wherein we network sensors and shooters with fire-control and command systems to realize the potential of our deployed systems.

There are many specific reasons for networking our systems. Networking expands our battlespace, provides for a layered defense and extends situational awareness. We should network our systems into a system of systems even, if necessary, at the expense of individual weapons-system lethality. This is a departure from decades of maximizing individual weapons-system lethality, but the synergistic effectiveness of networked systems no longer can be denied.

The system-of-systems approach should not stop at today's ADA brigade tactical operations center, but should extend to include other Army systems. As many know, the Future Combat System brigade combat team is built on an advanced architecture that will network existing fires and maneuver systems. This presents an opportunity to integrate and coordinate offensive and defensive systems.

If we agree we need to fight our adversaries with our full arsenal and deliver precision fires, there is an opportunity to create momentum as we form the Fires CoE.

On a global scale, we are trying to integrate our ballistic missile defenses' active defense systems, sensors and command and control to deliver a coherent, layered defense across combatant commanders' boundaries. We are work-

ing the cross-combatant commander processes to integrate the attack operations and nonkinetic capabilities into our concept of operations. Technically, we can get there in terms of system capability, but this requires us to think anew at the combatant commander level.

We no longer can confine our thinking to the combatant commander boundaries drawn on the map, nor can we confine our thinking to one time zone, one country or one adversary. Nor can we expect the time-tested, theater-centric processes to answer the global problems in total—the context has changed. We need to think differently and behave differently to optimize our systems and bring to bear our full suite of capabilities. We must determine not to settle for “lowest-common-denominator” solutions or accept compromises simply because both parties grudgingly agree to them.

The hardest aspect of the global integrated missile defense business is working the cultural biases inherent in our warfighting structures. We can hold firm to our ways and be less, or we can invite new thinking and change our behaviors and approaches.

Today, a similar challenge faces Air Defenders and Field Artillerymen, but on a different scope. It's not a global challenge, but a challenge within our Army combat formations. We have the capability within reach to integrate effectively. The challenge will be culture. If we can let go of our familiar lifeline and adapt, then we can leverage the strengths found in each Branch and begin to build new concepts, new architectures and a new class of Warrior.

The challenge falls on the shoulders

of our junior and mid-level NCOs and officers. They will have to see the vision through to reality. Let's not revert to the lowest common denominator and collocate two centers or simply merge centers at Fort Sill—let's create what is needed to fight a determined enemy. Establishing the Fires CoE is a vital step in preparing us for the next fight while supporting the current force. The key to the success will be not only the technology overmatch or the systems' capabilities, but also will be the adaptive fires leaders who begin their journeys at the Fires CoE.

Lieutenant General Kevin T. Campbell is the Commanding General (CG) of the US Army Space and Missile Defense Command and the US Army Forces Strategic Command (STRATCOM) at Redstone Arsenal, Alabama. He has served as the Chief of Staff of STRATCOM at Offutt AFB, Nebraska; Director of Plans, J-5, STRATCOM (West) and US Army Space Command both at Peterson AFB, Colorado. He was the Deputy CG of the Air Defense Artillery (ADA) Center and Fort Bliss, Texas, and CG of the 32nd Army Air and Missile Defense Command (AAMDC), also at Fort Bliss. He has served as the Commander, 94th ADA Brigade and Commander for 2nd Battalion, 43rd ADA (2-43 ADA) (Patriot), both part of the 32d AAMDC, US Army Europe and Seventh Army in Germany, deploying in support of Operations Desert Shield and Storm while Commander of 2-43 ADA. He has two master's degrees, one in National Security and Strategic Studies from the US Naval War College at Newport, Rhode Island, and one in Personnel Management and Administration from the University of New Hampshire in Durham.

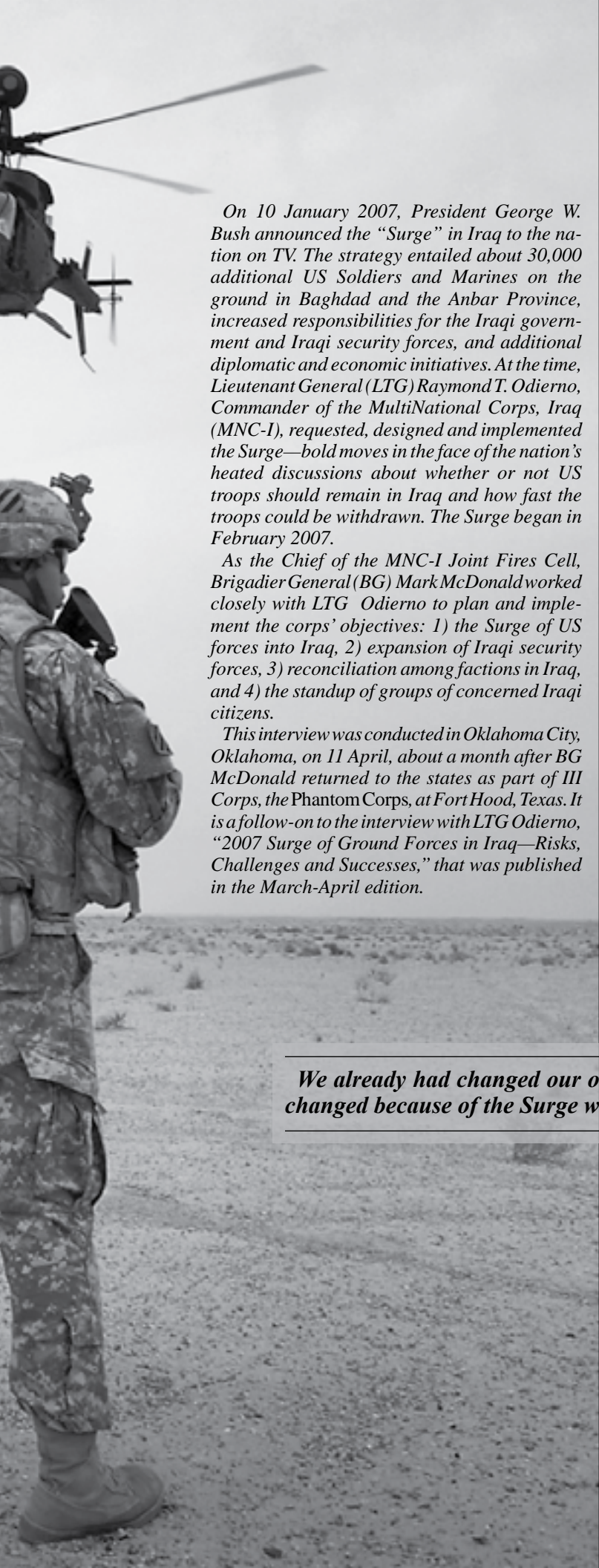
Brigadier General Mark McDonald
Former Deputy Commanding General for Fires and
Chief of the Joint Fires Cell, MultiNational Corps, Iraq

Fires for the 2007 Surge in Iraq: Lethal and Nonlethal

An Interview by Patrecia Slayden Hollis



CPL William G. Jonsson, PFC Frederic J. Koons and PFC Jose Valentin (left to right), all of 3rd Battalion, 7th Infantry (3-7 IN), watch as an OH-58D Kiowa helicopter swoops low over their position in Babahani, south of Baghdad, on 10 March. Koons, a fire supporter, is providing liaison between his commander and the helicopter pilot via his radio. (Photo by SGT Ben Brody, 4th Brigade Combat Team, 3rd Infantry Division Public Affairs)



On 10 January 2007, President George W. Bush announced the “Surge” in Iraq to the nation on TV. The strategy entailed about 30,000 additional US Soldiers and Marines on the ground in Baghdad and the Anbar Province, increased responsibilities for the Iraqi government and Iraqi security forces, and additional diplomatic and economic initiatives. At the time, Lieutenant General (LTG) Raymond T. Odierno, Commander of the MultiNational Corps, Iraq (MNC-I), requested, designed and implemented the Surge—bold moves in the face of the nation’s heated discussions about whether or not US troops should remain in Iraq and how fast the troops could be withdrawn. The Surge began in February 2007.

As the Chief of the MNC-I Joint Fires Cell, Brigadier General (BG) Mark McDonald worked closely with LTG Odierno to plan and implement the corps’ objectives: 1) the Surge of US forces into Iraq, 2) expansion of Iraqi security forces, 3) reconciliation among factions in Iraq, and 4) the standup of groups of concerned Iraqi citizens.

This interview was conducted in Oklahoma City, Oklahoma, on 11 April, about a month after BG McDonald returned to the states as part of III Corps, the Phantom Corps, at Fort Hood, Texas. It is a follow-on to the interview with LTG Odierno, “2007 Surge of Ground Forces in Iraq—Risks, Challenges and Successes,” that was published in the March-April edition.

We already had changed our organization and processes coming into theater, but what changed because of the Surge were the tempo of and our overall approach to operations.

Q How did your Joint Fires Cell integrate and synchronize joint lethal and nonlethal fires for the corps commander in the targeting process?

A Our process for integrating and synchronizing joint fires was based on how we decided to organize the cell. [See the figure for the organizational chart on Page 8.]

When we arrived in Iraq, MNC-I had a “Joint Effects Cell” to integrate and synchronize joint fires. It was a stand-alone organization for lethal and nonlethal fires. But all the planners remained in the cell; they were not integrated with the C3 Operations shop. Every week the Joint Effects Cell held an effects coordination board meeting chaired by the MNC-I commander. The board members discussed the effects they wanted for the future and how to implement them.

During our MRE [mission rehearsal exercise] before deploying, we tried to use the Joint Effects Cell organization and processes but were not comfortable that they were going to integrate joint fires.

In the “old” days, I knew that if the battalion or brigade fire supporter and maneuver commander came up with two separate plans and then later tried to integrate them into one plan and synchronize its execution, the plan did not work. The fire supporter and commander had to work together to develop one plan with the fires part of the plan supporting the commander’s intent. If you develop a plan that way, it works.

So we took all the planners in the cell and put them in the three C3 Operations “horizons”—Current, Future and Plans. When any plan was developed, it was developed with the input of all the lethal and nonlethal fires planners, which went a long way toward integrating the plan and synchronizing its execution.

We operated just like we did when I was a division artillery commander [82nd Airborne Division, Operation Iraq Freedom, 2003]. All of the fire support planners worked for me, but they were in the division G3 shop helping to develop the plan. So in MNC-I, we bumped that concept up to the corps level and developed the plan the way it has worked well at the lower levels. We renamed the Joint Effects Cell the “Joint Fires Cell.”

It was my job to supervise the execution of the fires plan. I was at all the MNC-I planning meetings with General Odierno and knew his mission and commander’s intent—what he wanted done.

One of our biggest challenges initially was to decide what part of the corps would be responsible for nonlethal fires—the Joint Fires Cell or C3 Operations. Each corps commander decides which part of his organization will be responsible for what function. I think the commander should have two principal agents: one in charge of his intelligence and operations and one in charge of his lethal and nonlethal fires. This simplifies corps operations and clearly identifies who is responsible for what.

It worked for us and has historically.

We had a senior colonel who was the C3 in MNC-I, which really should be a brigadier general’s job because of the broad scope of responsibilities and higher headquarters interfaces required. Our C3 was uniquely capable and did a great job, but I think each corps should have a brigadier general in charge

of lethal and nonlethal fires and a brigadier general in charge of operations.

Next we need to codify this organization and process in our doctrine. The new *FM 3.0* [*Field Manual 3.0 Operations*] takes a step toward that, but we still have a lot of work to do.

Also, fire supporters responsible for nonlethal fires need more training in how to coordinate and synchronize civil affairs, PSYOPS [psychological operations], information operations [IO] and others. Fire supporters don't have to be able to actually conduct, say, PSYOPS, any more than they have to shoot mortars or fly close air support to coordinate and synchronize them. The experts will conduct nonlethal fires. But fire supporters must understand them better. I know the FA has added instruction on nonlethal fires in some courses—we just need to formalize that.

Q Why change the name of the Joint Effects Cell to the Joint Fires Cell?

A For the past 10 or so years, our leaders in the Department of Defense have been struggling with the concept of “effects-based operations” [EBO]. They knew that EBO was much more than just a military solution—EBO includes diplomatic, information, military and economic constructs, all of which have “effects.” The name “Joint Effects Cell” was based on the theory that the corps conducted EBO.

It is really tough “to get your arms around” *effects*—the Army

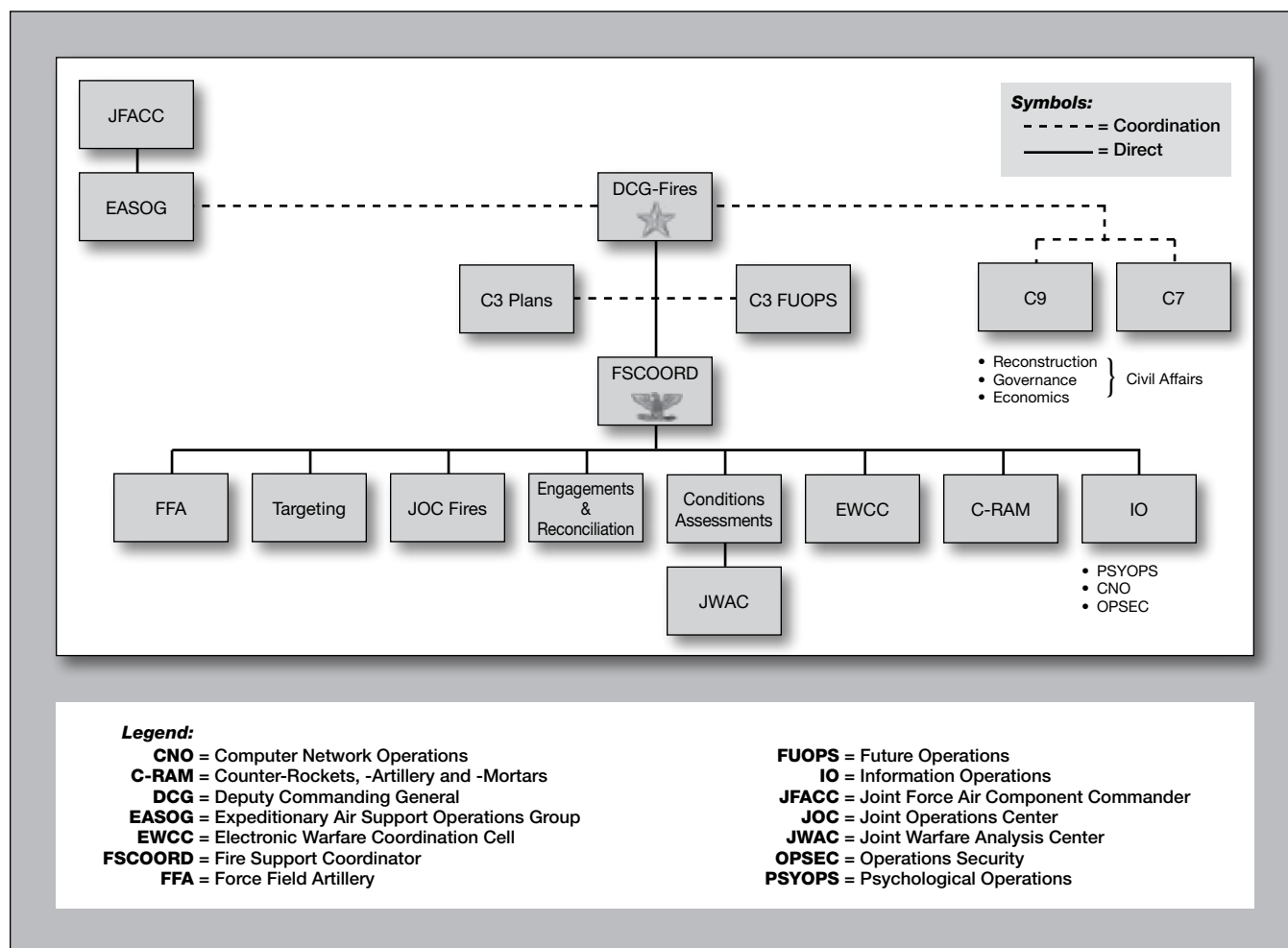
has been “all over the map” trying to define it. If you think about it, *everything* the Army does has an effect. An infantry company moving through a town has an effect. Yet in the EBO construct, the effects coordinator does not coordinate, integrate or synchronize the effect of a company moving through the town. He really integrates and synchronizes what we called in the old days “lethal and nonlethal fires.”

The fire support coordinator [FSCOORD] always has been responsible for lethal and nonlethal fires—but up until the past several years, he just hasn't had many nonlethal fires to coordinate. Well, now he has a “boat load” of them.

The Army has decided not to use the term EBO, and I completely agree—hence we changed the corps cell's name to the Joint Fires Cell.

Q Having been in Iraq two months before the Surge began in February 2007, how did your cell operations change with the advent of the Surge?

A We already had changed our organization and processes coming into theater, but what changed because of the Surge were the tempo of and our overall approach to operations. Rather than conducting “separate” operations around the country, we executed major coordinated operations, such as Operation *Fardh al Kanoon* [Iraqi for “Enforcing the Law”] to Secure Baghdad and Operations Phantom Thunder, Phoenix and Strike. We capitalized on all the objectives the divisions



The Joint Fires Cell of the MultiNational Corps, Iraq (MNC-I)



US Soldiers, Iraqi police and members of *Sahawa*, a concerned local citizens group, conduct a patrol in Rusafa, Baghdad, Iraq, 26 January. The Soldiers are from the 132nd Military Police, 18th Brigade; 95th Military Police Battalion; and C Company, 1st Battalion, 504th Parachute Infantry Regiment. (Photo by SSgt Jason T. Bailey, US Air Force)

Q You were responsible for the MNC-I objective of standing up concerned Iraqi citizens groups during the Surge. How did you stand up those groups? What remains to be done?

A About mid-spring of 2007, the planning group got together and said, “What just happened in Anbar?” In Anbar Province, the tribes started “awakening”—the tribal leaders rejected al Qaeda and decided to help the Coalition Forces and, by default, eventually to work with the Iraqi government.

The awakenings were pretty successful. So we tried to figure out how we could make awakenings happen throughout the country. We knew we could take advantage of our past and ongoing information and other operations that showed the Iraqi people al Qaeda is evil and would kill them at will, which is what al Qaeda was doing.

So, working with us, the Iraqi government stood up the Reconciliation Committee—actually the “Implementation and Follow-Up Committee for Reconciliation.” The Joint Fires Cell worked closely with that committee, meeting every week and discussing the details of the reconciliation program.

The corps had two parts in reconciliation. First, we had to determine the process we were going to use to reconcile with Iraqis who once had fought against us and organize them into concerned citizens groups—later known as “Sons of Iraq.” Our second part was to turn that process into procedures for the divisions to implement. The divisions’ brigades and battalions were the units that contacted the Iraqi groups and proposed reconciliation—they made reconciliation happen.

had and integrated them into corps-level operations to get simultaneous and synergistic effects.

These operations implemented the COIN [counterinsurgency operations] doctrinal three steps of “clear, control and retain.” The concept is that whatever areas we cleared, we controlled and retained control of—if we took an area from al Qaeda, we never gave it back.

To do that, we needed extra forces—the Surge. Because the additional troops were not enough to implement the three COIN steps all around the country, we needed help from the Iraqi security forces. When we went into an area, we stood up a joint security station for our two forces to work together to clear, control and retain the area.

During that time, one of our bigger challenges was to conduct targeting at the operational level. Everyone is comfortable with targeting at the battalion and brigade levels: you have specific targets, you match the assets available to the targets and execute the targets—go through the D³A [Decide, Detect, Deliver and Assess] targeting process—and it all works.

But at the corps level, you are not actually going to go out and capture or kill anything or influence local leaders, etc. You are going to develop a broad plan for how you want those missions accomplished and then pass that plan down to the divisions for their brigades and battalions to add the details and execute it. We used the broader MDMP [military decision-making process], but at the operational level, the MDMP and D³A basically are the same. (Cells within the Joint Fires Cell, such as IO, might conduct targeting—systematically go through D³A—to identify their IO messages and then bring them into our operational plan.)

At our level, we assess the operational environment and then target against it. We target against al Qaeda, criminals, extremists, corruption in governance and other operational activities that inhibit our abilities to secure Iraq and transition power to the Iraqi government.

We need to codify operational-level targeting in our higher level doctrine. If we don’t codify it, then everyone’s targeting comfort zone will cause them to fall back to tactical level targeting and produce, say, “an HPTL” [high-priority target list], which is not the corps’ job; it is the job of units below corps. We need to help, not hinder targeting.

The Sons of Iraq reconciliation program includes people who once fought against us who now are fighting with us. That is 91,000 people who help us protect the Iraqi people and give our forces intelligence information.

If you think through the reconciliation program, you realize how powerful it is. Reconciliation provides opportunities for insurgents who were fighting against the government to join the government and Iraqi security forces to fight al Qaeda and, eventually, illegal militias as well. Joining with former enemies initially made the Iraqi government nervous, even though the Sons of Iraq signed statements both rejecting al Qaeda and Iranian-influenced and sectarian extremist groups and pledging support for the Coalition and Iraqi forces and the Iraqi government.

But the program has proven to be very successful with the majority of the Sons of Iraq sincere in their willingness to help the government eliminate al Qaeda in Iraq and deal with extremists and criminal elements.

The Sons of Iraq became important to the third step in COIN: retaining control of cleared areas. We don’t have enough forces to leave some behind to maintain control in all the areas we cleared. So the Coalition Forces have contracted with some Sons of Iraq to pull security in their communities. The Iraqi government approved our contracts with the Sons of Iraq, who are former enemies of the government, because we worked

the program in conjunction with the government—the Iraqi government was involved in the process.

What remains to be done? We need to transition our security contracts with the Sons of Iraq to the Iraqi government. As I was leaving in February, some contracts already had transitioned to the Iraqi Minister of Interior. Many of the Sons of Iraq actually are transitioning from the security contracts to join the Iraqi security forces.

When I left Iraq, there were 83,000 Sons of Iraq, and I just read a report that says now there are 91,000 Sons of Iraq.

To help Iraq as it becomes more secure and needs fewer Sons of Iraq pulling security, we initiated another program, one that is similar to the US Civilian Conservation Corps (CCC) in the 1930s. Our program moves these Iraqis into public works projects, providing jobs for them and additional stability to the country while helping to rebuild Iraq. The US and the Iraqi governments are jointly funding this initiative.

The Sons of Iraq reconciliation program includes people who once fought against us who now are fighting with us. That is 91,000 people who help us protect the Iraqi people and give our forces intelligence information.

The laborious targeting process we used to use has been streamlined. When our forces move into an area, they contact the Sons of Iraq and give them a list with, say, 10 al Qaeda bad guys on it; the Sons of Iraq serve as guides, telling our forces exactly where to find most of the bad guys, house-by-house.

The basis of the COIN strategy is to get the people to join you in fighting the bad guys—the reconciliation program does that.

Q During your tour in Iraq, the fires brigades belonged to the divisions—what are your observations about their performance? What is the role of a FSCOORD in a division with a fires brigade?

A We need a fires brigade for every division in the Army—the division commanders in MNC-I all wanted them. And the fires brigade commander should be the division FSCOORD

and have a DFSCOORD [deputy FSCOORD] on the division staff. Now that is about the same organization we have had for many years—but it *works*.

The divisions in MNC-I had some level of challenge in deciding who should do what—who would be the FSCOORD: the FA colonel on the division staff designated as the “FSCOORD” or the fires brigade commander, a colonel, as the FSCOORD. We need to take that ambiguity out of the equation.

We must organize and train the way we fight. Every division should have a fires brigade, so the division commander can count on the fires brigade commander to be his FSCOORD. His FSCOORD coordinates and synchronizes all the division’s fires, including nonlethal fires, working closely with G3 Operations and with fire support planners integrated into the G3 shop.

I think we need to do the analysis to see if we need a fires brigade for every corps as well. The additional headquarters’ planning and execution capabilities gave our division commanders a lot of flexibility. I think corps commanders need that flexibility.

Q As discussed in this magazine many times, Field Artillerymen have been performing multiple standard and nonstandard missions in theater. Although such diversity demonstrates the flexibility of the FA for the Army, how do we train to perform the nonstandard missions effectively while staying proficient as Field Artillerymen for the long term?

A We certainly have to train for the long-term in high-intensity as well as persistent conflict and balance both of them. Right now, Field Artillerymen have performed very well in their standard missions and in a wide variety of nonstandard missions as military police, transporters, maneuver battlespace owners and others. That tells me that our leader training is working well.

But we need to include training for these nonstandard missions, so our Field Artillerymen have a “base” of knowledge from which to operate.

Some Field Artillerymen are nervous about the fact that many of our branch members have not fired a round since initial entry training [IET]. But I can tell you we fired more than 65,000 rounds in Iraq last year—timely, accurate fires—using some FA units that have been conducting nonstandard missions for five years. Many fire direction chiefs and fire support officers who fired these rounds had not fired thousands of rounds like I had when I was a captain.

There is no doubt that we need to be able to train or retrain our Field Artillerymen quickly and effectively, minimizing risks when they move from nonstandard to standard missions. To do that, we must simplify and automate cannon artillery and its training system.

MLRS [Multiple-Launch Rocket System] operations are simple and have worked well since we introduced MLRS almost 30 years ago. You don’t have to check a fuze setting on MLRS. You don’t have a manual backup system on MLRS or have to perform other procedures you have to perform for cannon artillery.

Today we train cannon artillerymen pretty much like I trained in the early ‘80s. We teach them manual gunnery procedures and

An Excalibur roars out of an M777 howitzer from A/2-11 FA on Camp Taji, northwest of Baghdad, Iraq, 26 April. (Photo by SPC Derek Miller, 2nd Stryker Brigade, 25th Infantry Division)



BG Mark McDonald listens to CSM William E. High Jr., then Command Sergeant Major of the Field Artillery, visiting Iraq from Fort Sill, Oklahoma. High now is part of the Coalition Military Assistance Transition Team in Iraq. (Photo courtesy of BG Mark McDonald)

then transition them to automated gunnery. We do that because we have been led to believe Artillerymen must know how to conduct manual gunnery to understand the theory of gunnery and be able to troubleshoot when something goes wrong.

Well, it is 2008—time is moving forward, but we have not moved gunnery training forward.

Back in the '30s, the Field Artillery transitioned from horses to trucks. Some people said, "This will *never* work! The trucks will break down and run out of fuel. There ain't *nothing* as good as the horse."

Manual gunnery is like the horse. We love it. But computers are here, and they are here to stay, just like the trucks. Everyone has a little hand-held computer that can calculate *everything*—we easily can add our databases to computers—TFTs [tabular firing tables] and others—and let the computers do all the work.

And young people today *learn* by using computers. We need interactive computer-based learning to teach gunnery theory (and other knowledge). Artillerymen do not need to know how to execute manual gunnery.

The pundits will say, "But they won't be able to troubleshoot when there is a gunnery problem." Troubleshooting now is based on experience. The troubleshooting process is logical and predictable. We can build computers that can troubleshoot rapidly when any of the elements of gunnery go wrong. We even can build computers that troubleshoot proactively and tell the gunner, "If you fire 'this' round, it is *not* going where you want it to." Computers need to do all that work for us.

Now we can't just stop teaching manual gunnery and only teach our present automated cannon artillery instruction—that won't work. We have to have the equipment that complements automation and the computerized training system in place for automated gunnery to work.

We must automate the cannon artillery system fully, train our Cannoneers as simply and effectively as we train our Rocketeers and then add training on nonstandard missions. Then we won't have to worry about whether or not our Field Artillerymen have the skills and knowledge to move between nonstandard and standard missions.

The horses are gone. The trucks work fine. We have to change our cannon artillery system and training.

We also need to update our training to reflect the modern battlefield. For example, we still train our young officers how to "guess a grid" in the impact zone so they then can adjust fires onto the exact location of the target—and we grade them on their abilities to do that. We ought to be training our young officers to operate and supervise the use of precision equipment—train them how to determine grids against which we can use precision munitions.

Guessing the grid is good for people who still ride horses.

Q How effective was the 70-kilometer Guided MLRS (GMLRS) Unitary, a precision-guided munition (PGM)? The 24-kilometer 155-mm Excalibur Unitary PGM?

A Extremely effective. The accuracy of these PGMs is exactly what we need in an urban environment.



Using GMLRS, we could fire a projectile with a 200-pound warhead and take out only a portion of a house, if we needed to, or fire several projectiles and take out the entire house—both options with very little collateral damage. GMLRS was the brigade commanders' weapon of choice.

We could bring these PGMs in quickly in all weather conditions. The airspace in our environment is very complex, but with our fire support automated systems, we could clear airspace for our PGMs rapidly and routinely.

PGMs are here to stay, and we need to develop more and figure out ways to use them. For example, why shoot hundreds of counterfire rounds when we can shoot one PGM and take out the piece shooting at us? We also need to improve our system to determine accurate grids.

We always should strive to improve the accuracy of all the rounds we fire, including "dumb" rounds with the addition of Precision Guidance Kits (PGKs). We should fire once and do the job, whether taking out a large enemy formation that is moving or one enemy howitzer firing at us that is stationary.

Q What message would you like to send US Artillerymen stationed around the world?

A Your performance has been *spectacular*. You fired more than 65,000 rounds—very accurately, causing little collateral damage. You brought in 100s of tons of Air Force munitions. You performed many nonstandard missions *superbly*, including owning battlespace.

You make me *proud* to be a Field Artilleryman.

Brigadier General Mark McDonald, until recently, was the Deputy Commanding General for Fires (DCG-Fires) and Chief of the Joint Fires Cell for III Corps, deploying from Fort Hood, Texas, as part of the MultiNational Corps, Iraq. He was instrumental in planning and executing the 2007 Surge in Iraq. Currently, he is the DCG of III Corps at Fort Hood. He also was the Assistant Commandant of the Field Artillery School and DCG of Fort Sill, Oklahoma, where he had served as Chief of Staff. He commanded the 82d Airborne Division Artillery during initial combat in Operation Iraqi Freedom, the same division in which he had commanded two batteries at Fort Bragg, North Carolina; he commanded the 3rd Battalion, 321st Field Artillery, part of the 18th Field Artillery Brigade, also at Fort Bragg. He holds a Master of Military Arts and Science from the Command and General Staff College, Fort Leavenworth, Kansas.

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Theater Security Cooperation

Theater security cooperation (TSC) activities strengthen the United States' relationships throughout the world. As part of the TSC activities, the delivery of lethal and nonlethal fires is important not only to the US Army, but also to our many allies and friends.

In my recent travels in Europe, it was clear that Field Artillery commandants are working on many of the same developments. My intention is to create an "international fires community of

purpose"—one where we can communicate with our allies on critical fires and fire support issues. We are working toward a time when Artillerymen throughout the world can pick up the phone, call each other and discuss fire support topics.

Major General Peter M. Vangjel
Chief of Field Artillery (FA)
Commanding General, FA School and Fort Sill

Importance of FA Engagement in TSC

Shape. Joint and multinational operations—inclusive of normal and routine military activities—and various interagency activities are performed to dissuade or deter potential adversaries and to assure or solidify relationships with friends and allies. They are executed continuously with the intent to enhance international legitimacy and gain multinational cooperation in support of defined military and national strategic objectives. They are designed to assure success by shaping perceptions and influencing the behavior of both adversaries and allies, developing allied and friendly military capabilities for self defense and coalition operations, improving information exchange and intelligence sharing, and providing US forces with peacetime and contingency access. "Shape" phase activities must adapt to a particular theater environment and may be executed in one theater in order to create effects and/or achieve objectives in another.¹

Joint Publication 3-0 Joint Operations (Feb 2008)
Chapter IV, Para 5d2e1

US Army Central Command (USARCENT)—recently transformed to the US Army's new Army Service Component Command (ASCC) structure—has planned or conducted 60 peacetime military engagements this fiscal year. And USARCENT is just one of five ASCCs, associated with the combatant command, that are conducting peacetime military engagements.

Peacetime military engagements are a component of theater security cooperation (TSC), and TSC is part of a combatant commander's theater strategy for linking military activities involving other countries to US national strategy objectives.² Service component commands design their TSC plans to support the combatant commander. TSC stresses activities that directly support theater operational plans and objectives.

The TSC plan contains events or, more properly, peacetime military engagements that will be conducted with friendly and partner nations. Of those 60 events ARCENT conducted, eight were Field Artillery (FA) or targeting focused events. Continued allied-nation requests for FA events—and the resources US Army commanders are willing to dedicate to these events—emphasize the importance of fires interoperability with our allies and within a coalition.

By Major William B. Johnson, FA

USARCENT is a forward-based ASCC that conducts joint and combined full-spectrum operations, continuous support to theater operations, Title 10 operations and Phase 0 shaping operations in the Central Command (CENTCOM) area of operations (AO) to defeat adversaries, promote regional stability, support allies and protect national interests.

FA's Role. The US cannot accomplish this mission effectively without the help and cooperation of allied and partner nations within the AO. One way to gain this help and cooperation is through peacetime military engagements with allied and friendly nations using the interoperability of fires—to include FA—as one of the primary focuses of these engagements.

FA is one of the most technically challenging and highly adaptive branches in the US military, and its integration is a skill our allies want to study and learn. FA provides commanders capabilities across the full spectrum of operations. FA is capable of conducting all-weather precision strikes and engaging large dispersed targets. To be effective, FA must be integrated into operations from the tactical to the operational level.

To accomplish this integration, there are a multitude of command and control (C²), sensor and delivery systems that must be understood and integrated. Integrating fires during joint operations is challenging; managing these systems and processes becomes even more problematic when integrating multinational coalition operations and their fires. The different equipment and technologies almost always result in a mixture of systems that is unique to that multinational force. US and coalition commanders must be able to accommodate differences in operational and tactical capabilities among their multinational forces.

Integration. The US military is and has been engaged in the War on Terrorism (WOT) for the past seven years. While the US military undoubtedly is a world class force, we would not be successful without the help and cooperation of friendly and allied nations. Currently, our Coalition partners are integrated at all levels of operations in Iraq and Afghanistan, and major operations in the future likely will involve coalition forces as well. However for coalitions to be successful, they must be able to function well together. We can ensure this occurs by following the National Defense Strategy.

In the National Defense Strategy, strengthening alliances and partnerships is a strategic objective.³ To achieve this objective, the National Defense Strategy states the importance of increasing partner-nation capabilities and, specifically, their abilities to operate with US forces. It states that the principal method for accomplishing this is through security cooperation programs. The 2006 Quadrennial Defense Review echoes the same theme by pointing out that the US military's interaction with foreign militaries provides valuable opportunities to expand partner capacity as well as to establish trust and relationships.⁴

The Army outlines how it will accomplish this task in *Field Manual (FM) 3-0 Operations*. The introduction to *FM 3-0* states that winning battles is important but alone is not sufficient and that stability operations—of which TSC is a part—are as important as, if not more important than, lethal operations. *FM 3-0* lays out the spectrum of conflict from “stable peace” to “general war” within which the Army operates (see figure on Page 14).⁵

Ideally, stable peace is where the Army would choose to operate. Stability operations, which encompass the operational theme of peacetime military engagements, seek to set the conditions for maintaining or achieving a stable peace. TSC programs, specifically peacetime military engagements, are key to ensuring our ability to build

successful, functional coalitions to meet security challenges and maintain stability.

One aspect of theater strategy is a TSC plan that outlines the peacetime military engagements with partner and friendly nations. Peacetime military engagements provide a professional exchange of ideas about doctrine and tactics, techniques and procedures (TTPs) that enables all sides to learn.

Peacetime Military Engagements. USARCENT conducts peacetime military engagements activities with 23 countries in the CENTCOM AO to develop working relationships with those countries' armed forces. These activities allow our Soldiers and leaders to share training, education and experiences with partner nations in the region, as well as gain insight from the soldiers and leaders within the AO, promoting interoperability.

Peacetime military engagements activities primarily consist of conferences, seminars, staff liaisons, exchanges and exercises—events designed to foster mutual understanding, build rapport and exchange useful information with and among our allied and partner nations' armies in the AO. Events that focus on FA, the integration of fires and the synergy provided to the warfighting functions offer a unique opportunity to build on the coordination and interoperability required of multinational and coalition operations.

FA has been an integral part of success in WOT. In the current operating environment, all lethal engagements must be viewed with an eye towards accuracy and the reduction of collateral damage. With long-range, all-weather capability and pinpoint precision accuracy, FA is often a commander's first choice for engagement. FA not only provides support at the tactical level, but also is a force multiplier at the operational level with rockets and missiles.

While all 23 countries in the USARCENT AO have an army, they all may not have a viable air force or a naval force. They all have an artillery capability, and the artillery within these forces predominantly provides both tactical and operational fires for their armies. Effectively conducting multinational operations requires an understanding of how allied and partner nations integrate fires and how US and other partners in the region operate. Currently, most nations within the USARCENT AO are moving toward an air-land battle concept where FA is a separate battlefield operating system.

Relationship Benefits. The US military is transforming, becoming even more adaptable and lethal. This is being accomplished by developing and adapting new technologies, doctrine and organizations. Peacetime military engagement events that focus on artillery and its transformation allow us to share and demonstrate current developments



An Egyptian soldier signals his tanker while moving on shore after dismounting a US Navy vessel during the amphibious landing exercise of Bright Star 2005, 15 September 2005. (Photo by SGT Alex Licea, Combined Joint Task Force/Coalition Forces Land Component Command Public Affairs Office)

and concepts in the systems' integration (delivery, sensor and C²) and help allied and partner nations develop and integrate their artilleries.

The continued development of partnership capabilities and doctrine will increase current and future coalitions' functionality. Conversely, US counterparts benefit from education and experience in military operations and basic military competencies of partner nations. The skills learned and shared, from the tactical to strategic levels, offer interoperability benefits to both foreign and US forces.

FA engagements provide a unique opportunity in the USARCENT AO. The countries of the region have well-trained and equipped artillery forces that are effective and relevant. By taking one country's strengths and sharing them with another, both countries gain an enhanced capability. If you can integrate fires, you have created a process that allows a coalition to function from the tactical to the operational levels.

This includes the ability to manage joint airspace to clear fires. Airspace management and interoperability among the countries in the AO are crucial to defending themselves, and coordinating their fires is critical. FA peacetime military engagements events work to promote and improve these capabilities.

Performing this interaction at a bilateral level enhances the involved countries' capabilities as we learn from each other, allows for intimate learning exchanges and creates lasting and meaningful relationships. Doing the same thing in a multilateral format allows for broader

discussion and identification of both strengths and weaknesses provides a broad forum for dissemination of what works (and what does not) and strengthens relationships at a higher level.

USARCENT peacetime military engagements events, both past and present, showcase these benefits. During the period of 1999-2004, USARCENT conducted numerous bilateral events with FA forces throughout the USARCENT AO. These events focused on TTPs, C², targeting and communications. By identifying concerns and discussing them at a bilateral level, USARCENT improved its ability to conduct coalition operations with each individual country. The results of these bilateral events led to the development and execution of an International Artillery Symposium that brought together the FA leaders from throughout the region to focus on areas of shared concern, identified through the bilateral events.

By participating in a multilateral forum, USARCENT increased its ability to cooperate with individual countries and enhanced the ability of participating nations to conduct coalition operations with each other. To date, two International Artillery Symposiums have been conducted, one hosted by the United Arab Emirates Land Forces Artillery Corps and the other by the Bahrain Defense Force Royal Artillery. Both were successful events that set the stage for future information exchanges that will benefit the region for some time.

A third International Artillery Symposium, involving 11 countries from the region, will be conducted in August at

the Fires Center of Excellence, Fort Sill, Oklahoma, and promises to continue the level of excellence and cooperation established by the United Arab Emirates and Bahrain.

A final aspect of TSC is that USARCENT can use peacetime military engagements to support countries as they acquire new weapons systems and field them into their armies. As a new system is acquired, TSC seminars, subject matter expert visits and staff exchanges can be used to supplement and reinforce the foreign military sales and international military education and training programs' funded training.

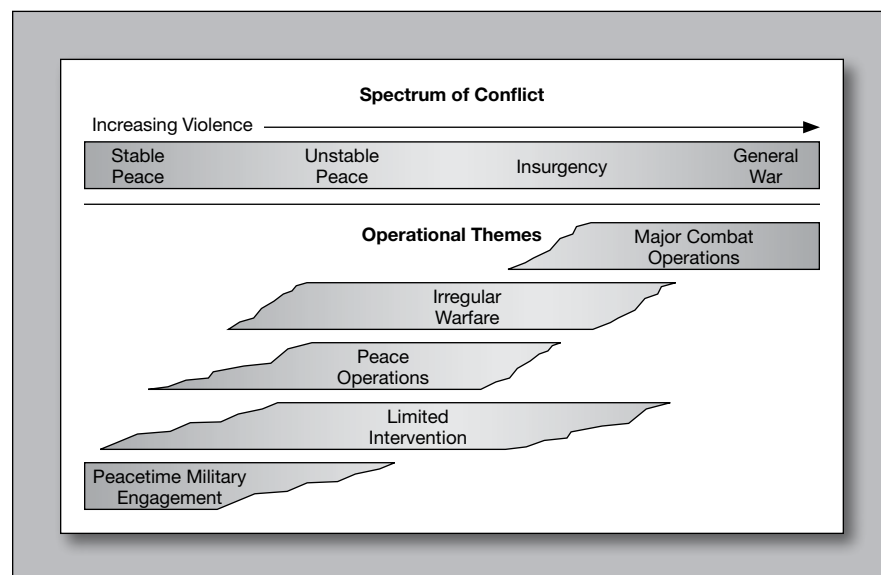
Peacetime military engagements as part of TSC are vital to accomplishing national goals and to USARCENT's mission specifically. As we move forward, we must continue to develop FA and our ability to conduct fires within a coalition force. We do so with greater effectiveness due to past peacetime military engagement events. Peacetime military engagements will continue to provide the US Army the ability to share what we have learned with our partners in the region and allow us to learn what they have to offer as well.

Endnotes:

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4. *2006 Quadrennial Defense Review Report* (Washington, DC: Department of Defense), 2006.
5. *Field Manual 3-0 Operations* (Washington, DC: Department of the Army), 2008.

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The Spectrum of Conflict and Operations Themes (*Field Manual 3.0 Operations*)



Bulgarian CPL Ivan Tanev of the 38th Infantry Battalion helps SPC Zachary Baker of 1st Battalion, 94th Field Artillery (1-94 FA), load a Bulgarian light machine gun during joint weapons familiarization at the Novo Selo Training Area, Bulgaria. (Photo by PFC Crystal Abbott, Southern European Task Force Public Affairs)

TSC Engagement in Europe—Building Coalitions

Given the demands of modern coalition warfare, theater security cooperation (TSC) is a priority mission for Army forces assigned to the US Army Europe (USAREUR). The Field Artillery (FA) has been and will continue to be a major contributor to TSC in Europe.

Several factors combine to create unique advantages for Artillery forces stationed in Europe in the TSC arena. USAREUR units enjoy a geographic proximity to dozens of nations eager to train with the US. Additionally, many of our current partners, particularly those in Eastern Europe, retain a military structure centered on mechanized and armored forces, with significant numbers of FA units available for targeted engagement.

Finally, the world-class training environment provided at the Joint Multi-national Readiness Center (JMRC) in Grafenwoehr, Germany, and the wide availability of ranges in our neighboring countries provide challenging settings for a variety of training opportunities at relatively low cost. Current operational demands have limited our ability to leverage these advantages in recent years, but an enormous potential exists—and the FA community in Europe will be a key

By Lieutenant Colonel Michael R. Eastman, FA

participant in TSC for years to come.

USAREUR's first priority has been and is providing trained and ready forces for our commitments to the War on Terrorism (WOT). The operational tempo in Europe, like that in the continental US, ensures that the vast majority of our operational units are in the predeployment-deployment-redeployment cycle. This has posed challenges for the Army's ability to resource many desired multinational exercises and has impacted on the frequency of TSC events over the last several years, but certainly does not diminish their importance.

TSC Plan. Peacetime military engagement, as defined by the recently released *Field Manual 3-0 Operations*, consists of "all military activities that involve other nations and are intended to shape the security environment in peacetime. It includes programs and exercises that the US military conducts with other nations to shape the international environment, improve mutual understanding, and improve interoperability with treaty partners or potential coalition partners."

The European Command's (EUCOM's) TSC plan guides execution of this important function, setting priorities for military engagement across Europe, and USAREUR units execute this plan as the Army component in theater. In fact, Artillery units in Europe are positioned uniquely to interact with many of our European allies, and USAREUR leadership has set the conditions for building on this potential in the coming years.

The investment in TSC in Europe during the past several decades has paid enormous dividends. One needs to look no further than our current operations in Iraq and Afghanistan for evidence. The vast majority of countries contributing land forces to both Operations Iraqi Freedom and Enduring Freedom are from the EUCOM area of responsibility.

Ties Strengthened. There are a range of factors that impact a nation's decision to participate in WOT. However, the fact that both longstanding allies and new partners from across Europe are willing and have the expertise to operate seamlessly in coalition warfighting with US forces is attributable directly to TSC engagements. These TSC engagements are designed to build partner capacity, ensure interoperability and strengthen military ties between these nations and

Theater Security Cooperation



A Bulgarian soldier (right) observes a US Soldier from 1-94 FA. The US and Bulgarian troops are training alongside Romanian infantrymen at Romania's Babadag Training Area during the final phases of a joint task force exercise at Mihail Kogalniceanu Air Base, Romania. (Photo by SGT Aimee Millham, US Army, Europe Public Affairs)

the US. The common procedures, equipment interoperability and shared confidence, so vital to successful operations, are the result of years of cooperation and engagement.

FA Benefits. Artillery units enjoy additional benefits and opportunities as a result of TSC in Europe. Many of our partner countries, and particularly those in Eastern Europe, retain a force structure that is based around heavy and mechanized forces, and FA is frequently a major component of their ground forces. This presents dual opportunities for engagement.

Not only is there increased interest in developing the nonlethal integration skills critical for success in the current counterinsurgency fight, but many of our European allies retain a strong desire to share tactics, techniques and procedures related to our more traditional core competencies. Forward deployed Artillery units enjoy the advantage of geographic proximity to these European partners, so opportunities for live-fire exercises in countries such as Bulgaria, the Czech Republic and Romania present another exceptional way to build partner capabilities and close relationships through TSC.

Operational demands have hampered USAREUR efforts at TSC somewhat, but FA remains a key contributor to our ongoing activities. During the past 12 months, successful NCO exchanges have occurred between the United Kingdom

(UK) and US Army National Guard units from Indiana, Michigan, Kansas and Illinois. B Battery, 2nd Battalion, 123 FA (B/2-123 FA) (105mm) from Macomb, Illinois, conducted a successful reciprocal small unit exchange with the UK Territorial Army from 16-30 June 2007.

For the active Army, FA played a central role in one of the highlights of USAREUR TSC activities in the past year. From August to October 2007, Soldiers from the 1-94 FA (Multiple-Launch Rocket System or MLRS) worked alongside units from Bulgaria and Romania as part of the first rotation to Joint Task Force-East (JTF-E), USAREUR's premier training site in Eastern Europe.

The battalion served as the core of a multinational task force for this multinational exercise, participating in various training events ranging from individual small arms and crew-served ranges, squad live-fire exercises, situational training exercises and other soldiering skills with Romanian and Bulgarian counterparts. Task Force 1-94 conducted exercises at locations in both countries, including Novo Selo Training Area, near Bezmer Air Base in Bulgaria, and at a forward operating site at Mihail Kogalniceanu Air Base, Romania.

The JTF-E rotation was received extremely well by all participating countries, and future rotations will expand to include the deployment of additional US active and Reserve Component Army units to Bulgaria and Romania, greater

joint participation and the potential for live-fire exercises incorporating mortars, cannon artillery and a range of sensors.

Recent FA Missions. Given the demands of the contemporary operating environment, however, FA participation in TSC in Europe during the past year has been focused on nonstandard missions rather than our traditional core competencies. This is an understandable consequence of both the demand on our operational forces and the emphasis placed on developing partner capacity for employment in a counterinsurgency environment.

Recent multinational rotations to the JMRC, for example, generally have not focused on the integration of lethal and nonlethal effects. Artillery training of late has been limited to preparing partner units for the current fight, emphasizing battle drills such as "react to enemy indirect fire" and instructing international soldiers on core tasks such as performing crater analysis. However, the potential remains for increasing emphasis on the planning, delivery and integration of lethal and nonlethal effects in future years.

In short, USAREUR's Artillery units enjoy several advantages that hold great promise for TSC in the coming years. Geographic proximity to our international partners, a high density of European artillery units eager for joint cooperation and a training environment that provides multiple venues for a wide range of training combine to make Europe an exceptional place to conduct TSC. Our investments in this program have paid enormous dividends to the US, its coalition partners and emerging allies. The FA community stands ready to play a central role as the USAREUR TSC program moves into the future.

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Fires in the Pacific's Theater Security Cooperation Plan

By Colonel Jack K. Pritchard, FA

Admiral Timothy J. Keating, Commander, US Pacific Command (USPACOM), expressed his vision of the fiscal years 2008 to 2011 training strategy as, "A joint and combined training and exercise program that enhances, demonstrates and certifies the readiness of USPACOM forces in challenging events combining live, virtual and constructive environments."

The Pacific theater poses unique requirements. Five of the seven security treaties to which the US is a party—Japan, the Republic of Korea, Australia, the Philippines and Thailand—reside within USPACOM's area of responsibility (AOR). Ensuring the ability to meet these obligations is a key focus of the training strategy and USPACOM's

- Conduct training related to the War on Terrorism.
- Conduct exercises that advance security cooperation in accordance with the USPACOM Theater Security Cooperation Plan.
- Conduct training and exercises that mature joint and multinational capabilities and readiness across the range of military operations.
- Focus USPACOM joint task force training and certification on preparing forces for agile and responsive employment.
- Conduct exercises that ensure the credibility of operational plans.

US Pacific Command (USPACOM) Priorities for Training Programs within the Asia-Pacific Region



Soldiers from 3rd Battalion, 7th Field Artillery (3-7 FA), conduct interoperability training with Filipino gunners during live-fire at Fort Magsaysay, Philippines, during Balikatan 06. (Photo by MAJ Jayson B. Dodge, 1-338 Combat Support/Combat Service Support or CS/CSS)

Theater Security Cooperation (TSC) Plan.

The USPACOM AOR spans half the world's surface, 13 time zones, and includes five of the world's six largest armies. And, unlike Europe with its modern, technologically savvy armies linked by extensive alliances, the Asia-Pacific region is characterized by under-developed nations, a vast maritime environment and a culture of nonalignment. Additionally, throughout the Pacific, postcolonial and socioeconomic internal frictions, as well as unresolved territorial claims and mistrust between countries, threaten stability.

The recent demands of providing forces to other geographic combatant commands has strained USPACOM's ability to meet unit training requirements and to develop effective habitual relationships with the armed forces of other nations of the Asia-Pacific Region. These challenges, compounded by population growth and increasing environmental concerns, have limited available lands and training facilities for the conduct of realistic military training.

Despite these challenges, numerous opportunities exist within the USPACOM AOR. The ongoing realignments, movements and force reductions of USPACOM forces throughout the AOR will force new partnerships and operational relationships with the armed forces of the Asia-Pacific region.

Technological advances in simulations allow unprecedented interactive training between forces without necessitating physical collocation. Because of the threats of transnational terrorism, new requirements, missions and technologies are emerging, creating the need for partnerships with nations such as India, China and Indonesia.

The USPACOM commander established priorities for training programs within the Asia-Pacific region to establish and maintain credible joint and multinational forces trained to assure partners, dissuade competitors, deter aggressors and be capable of agile, decisive response to crises throughout the Asia-Pacific region (see the figure).

TSC Plan. The USPACOM TSC Plan is an active engagement strategy with

missions ranging from train-and-equip programs for building partner nation capacity to regional security initiatives and humanitarian assistance actions. The participation of fires and fire support elements in this plan long has been an integral part of the overall regional training strategy.

Fires participation in USPACOM TSC Plan exercises ensures our long-term security goals within the AOR. Participation can range from Artillery and fires subject matter expert (SME) exchanges to command post exercises (CPXs) and staff exercises (STAFFEXs) for corps-level combined staffs. Recent exercises focusing on multinational operations clearly have demonstrated the need to continue to develop our partnerships with regional nations and improve our fire support interoperability throughout the Pacific.

Balikatan. Balikatan is a USPACOM TSC exercise conducted annually in the Republic of the Philippines. Balikatan consists of civil-military operations, a field training exercise (FTX) and a STAFFEX/CPX. The exercise fosters interoperability and enhances the armed forces of the Philippines. The STAFFEX focus is to improve crisis-action planning and normally involves a crisis-response scenario. The FTX is designed to improve interoperability and training on joint activities and operations.

Typically, a US Army, Pacific (USARPAC) or Marine Forces Pacific (MARFORPAC) Artillery unit provides a firing battery to conduct interoperability training and SME exchanges with the Philippine Army during the FTX portion of this exercise.

Cobra Gold. Cobra Gold is an annual multinational TSC plan exercise conducted in the Kingdom of Thailand. Participating nations include the US, Thailand and a number of nations operating in a coalition task force. Cobra Gold reinforces USPACOM commitments in the Southeast Asia region by supporting regional War on Terrorism (WOT) operations and activities, focusing the exercise scenario on the most likely contingency operations in the Southeast Asia region.

Cobra Gold consists of three events: a CPX, humanitarian projects and a FTX. The corps-level CPX facilitates improved US joint and multinational forces interoperability and the ability to plan and execute complex multinational operations. Fires elements of the participating staffs perform typical contingency

planning and execution along with their regional partners. Humanitarian civic assistance project sites are conducted at locations that directly support WOT and TSC Plan objectives. The battalion-level FTX improves multinational combined-arms interoperability and operational tactical readiness and military-to-military exchanges. Artillery and mortar live-fire trainings and exchanges with the Thai Army advance US joint interoperability and tactical operational readiness.

Key Resolve/Foal Eagle. Key Resolve (formerly RSOI or reception, staging, onward movement and integration) is a US and Republic of Korea operations plan (OPLAN)-oriented warfighting CPX conducted annually in the Republic of Korea. Key Resolve focuses on USARPACOM and Combined Forces Command OPLANs that support the defense of the Republic of Korea.

Foal Eagle is a series of joint and combined FTXs held concurrently with Key Resolve. These two exercises demonstrate US resolve to support the Republic of Korea against external aggression while improving Republic of Korea and US combat readiness and joint and combined interoperability. Past CPXs have involved the fires staffs heavily in the joint and combined planning and execution of OPLAN functions. The FTX has included Artillery SME exchanges and live fires with Republic of Korea forces.

Ulchi Freedom Guardian. Ulchi Freedom Guardian (formerly UFL or Ulchi Focus Lens) is a US and Republic of Korea OPLAN-oriented, corps-level warfighting CPX held annually in the Republic of Korea. Ulchi Freedom Guardian is a key component of the US Forces, Korea (USFK), annual training program with the Republic of Korea.

Ulchi Freedom Guardian is a combination of two events: a Republic of Korea national mobilization exercise involving several hundred thousand Republic of Korea citizens practicing wartime activation and traveling to mobilization sites; and a Combined Forces Command warfighting CPX. The commander, USFK, uses this exercise to conduct training initiatives to transform the command and demonstrate enhanced warfighting capabilities. Major combined participants include the Republic of Korea and the United Nations Command Military Armistice Committee (UNCMAC). Typically, corps fire support elements provide joint and combined interoperability with their Republic of Korea counterparts.



CPT Nate Wilbourn, 3-7 FA, demonstrates manual gunnery procedures to a Filipino fire direction control section during Balikatan 06 at Fort Magsaysay, Philippines. (Photo by MAJ Jayson B. Dodge, 1-338 CS/CSS)

Yama Sakura. Yama Sakura is a bilateral US and Japanese Ground Self-Defense Force exercise focusing on full-spectrum operations. It is a computer simulated CPX involving both conventional and unconventional forces and is designed to improve US and Japanese Ground Self-Defense Force readiness and interoperability. Key focus areas for fires elements in previous years have included joint targeting, lethal and nonlethal effects synchronization and consequence management tasks.

Talisman Saber. Talisman Saber is a biennial US and Australia exercise that includes a combined CPX and FTX with force-on-force and live-fire training modules. The exercise is the primary Australia and US bilateral training evolution, exercising the commands as a combined task force in short-warning, power-projection and forcible-entry scenarios.



The exercise is designed to improve US and Australia combat readiness and interoperability, maximizing joint and combined training opportunities. In the process, Talisman Saber demonstrates US resolve to support a key ally in the region and advances the USPACOM TSC plan.

The Talisman Saber focus is high-end combat operations, transitioning into peacekeeping or other post-conflict operations. AUSARPAC or MARFORPAC Artillery unit provides a firing unit to conduct interoperability training and SME exchanges with the Australian Army during the FTX portion of this exercise.

Terminal Fury. Terminal Fury is an annual CPX designed to support USPACOM continuum of events to prepare USPACOM staff and Joint Task Force-519 for a major theater contingency. Terminal Fury provides venues for biennial Joint Task Force-519 certification and exercises warfighting decision-making and staff processes to achieve training objectives. Joint targeting and joint effects workgroups, centers, cells and boards are major exercise focuses, as Terminal Fury challenges participating commanders with competing demands of setting the conditions for success should deterrence fail.

These exercises are just a few of USPACOM's exercises supporting the TSC plan strategy in the Asia-Pacific region. Future opportunities to expand the fires and fire support participation are emerging as mission sets evolve and new partnerships emerge. Future exercises will focus on conducting major contingency operations; however, trends in identifying and defeating non-state, transnational threats are achieving increased attention. The USPACOM TSC Plan exercises will remain the most significant portion of the region's engagement strategy.

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International Student Division

Theater security cooperation (TSC) includes programs and exercises that the US military conducts with other nations to shape the international environment, improve mutual understanding and improve interoperability with treaty partners or potential coalition partners (see *Field Manual 3.0 Operations*).

One important TSC activity at Fort Sill, Oklahoma, that helps establish the Fires Center of Excellence (CoE) as an international leader in fire support and Field Artillery (FA) and engages our allies is training international students under the auspices of the Fires CoE FA School's International Student Division.

As an international leader in fire support and FA, military leaders at the Fires CoE actively engage the international FA community by frequent communication and in-country visits. Major General Peter M. Vangjel, Chief of FA and Commanding General of Fort Sill, recently traveled to England, France, Germany, Spain, Sweden and Switzerland, expanding international relationships and opening future training opportunities here. Reciprocally, FA dignitaries from Mexico and Senegal recently visited Fort Sill to experience first hand the leadership and training provided at the Fires CoE.

Mission. The FA School's International Student Division's mission is to provide administrative and logistical support to all international military students attending training at the Fires CoE.

The program, which has been in place on Fort Sill since World War II, has grown. During the past five years, the division hosted 68 countries, training more than 1,100 international military students. These students attend all unclassified professional development and technical courses available. These courses enhance cooperation among coalition partners through familiarization with US doctrine and capabilities as well as US planning methodology.

At the FA School, international military students enter a rigorous residential academic environment encouraging open-classroom dialogue. The environment is designed to give the students valuable insights into FA and allow them to participate in avenues providing a framework for joint teamwork. These students bring an international perspective to each class allowing their classmates—US Army students—a

better understanding of our coalition partners and allies and insights into various cultural and customs differences. In many cases, bonds of friendship are established among US and international military students—some of the world's future leaders.

The International Student Division's Field Studies Program is designed to show international military students the Democratic process through the civilian sponsorship program. Each foreign student is assigned to a host family illustrating first hand the American way of life. One of the program's main objectives is to champion human rights and dignity—part of the US' national strategy.

Student Opportunities. Most international students have the opportunity to meet government leaders during their stay at Fort Sill, including local mayors and Oklahoma's governor and congressional representatives. This exposure is designed to broaden their experiences, thus impacting future decisions they will make as military and civilian leaders.

These students are given an opportunity to experience the US judicial process by meeting with federal and district judges; to participate in education programs by providing cultural briefings to local school districts and universities; to discuss ethics; and to witness a free press process in action at local newspapers and television stations.

Ambassadors. This TSC activity enhances cooperation among coalition partners and allies around the world long after a class graduates. International military student graduates serve as ambassadors throughout their careers. They help establish the Fires CoE's reputation as an international leader in fire support and FA when they debrief their respective commands about the training they received and their experiences here. Present and former international military students encourage their fellow soldiers to seek training here.

The international students leave the Fires CoE with military training requirements met and with an exceptional grasp of the American way of life, initiating the core intent of TSC during their stay in the US—increased mutual understanding and improved interoperability.

Charles R. "Randy" Johnson
Chief, International Student Division
Fires CoE, Fort Sill, OK



Ordnance Corps: Filling Patriot's Maintenance Gap

The general public may have been unaware of the Patriot Missile System until the 1991 Persian Gulf War when news media aired footage showing Patriot missiles intercepting Scud missiles targeted at Dhahran, Saudi Arabia and Tel Aviv, Israel. The fiery collision of Patriot and Scud missiles became one of the war's indelible images. Overnight, the Patriot system became front-page news.

As the answer to the short- and medium-range ballistic missile threat, the Patriot system and the Air Defense Artillery (ADA) Soldiers who operated them, along with Ordnance Corps Soldiers who maintained them, were suddenly "hot commodities." Patriot battalions have added to the Patriot "mystique", especially with their stellar performance during Operation Iraqi Freedom (OIF), intercepting every Iraqi ballistic missile that threatened US and Coalition Forces advancing on Baghdad.

Since its combat debut, most of the public's attention has been focused on technological advances, such as the Patriot Advanced Capabilities-3 (PAC-3) missile that has enhanced Patriot's combat effectiveness. Very little attention has been paid to the Army's continuing struggle to enhance Patriot intermediate maintenance.

The "good news" is that, despite a slow start and some setbacks, Patriot intermediate maintenance is beginning to catch up with Patriot's technological advances.

Early Maintenance Plan. Patriot was developed and fielded in the 1970s

By Sergeant First Class Lee E. Cordray, OD

and early 1980s. Raytheon, the prime manufacturer, sold Patriot to the Army as a system that checked, evaluated and diagnosed itself with built-in test equipment tests. The system was designed to run a computer self-test and print out a list of parts that, when replaced, would repair system malfunctions 90 percent of the time. Nearly all of the replacement items on the battery replaceable unit list were available to Patriot units. The responsibility for removing and replacing malfunctioning parts at the unit-level was assigned to ADA Soldiers in Military Occupational Specialty (MOS) 14E Patriot Fire Control Operators and MOS 14TPatriot Launching Station Enhanced

Operators.¹ Raytheon addressed any faults that could not be fixed by battery replaceable unit replacements.

Based on the replacement-part philosophy, the Army did not expect to need intermediate-level maintenance personnel for the Patriot equipment; therefore, there was no plan for any type of intermediate-level maintenance support structure. However, when it became apparent that the built-in test equipment tests were not as reliable as predicted, the Army recognized the requirement for another level of maintenance.

Addressing Maintenance Shortfalls. Faced with this requirement, Raytheon developed a training program to take the most experienced of the organizational-level MOS 24T Patriot Operator and System Mechanic Soldiers and train them to a higher level of maintenance. Thus, an

The **Military Occupational Specialty 94S Patriot System Repairer** Soldier supervises and performs direct- and general-support maintenance on the Patriot Missile System, associated equipment and trainers.

Skill Levels 10 and 20 performs direct- and general-support maintenance on the engagement control station, phased-array radar, identification of friend or foe equipment, antenna and the communications relay group; installs software modifications and develops specialized computer software test procedures; analyzes and interprets Patriot diagnostic test results; maintains VHF data links; and performs some fiber-optics repairs.

Skill Level 30 performs the duties required for Skill Level 20; performs initial and final checkout and inspection of designated systems and their assemblies and subassemblies; and serves as technical inspector of quality assurance section.

Skill Level 40 performs the duties required for Skill Level 30 and supervises the preparation of maintenance forms and reports.



SSG William Willis, 94S Instructor (left), monitors SGT John Mink (middle) and PVT Christopher Evanko, both from 3rd Battalion, 6th Air Defense Artillery, Fort Bliss, Texas, as they conduct power distribution checks on the Patriot Radar. (Photo by SFC Lee E. Cordray)

additional skill identifier (ASI) of T5 was added (MOS 24T-T5) to identify these highly trained and skilled Soldiers.

The Army selected ADA MOS 24T organizational-level maintenance NCOs to attend an additional 59 weeks of training. The first 19 weeks of this training covered basic electronics, then the next 40 weeks focused on detailed troubleshooting needed when the built-in test equipment tests and replacement parts did not fix a problem.

Training Evolution. Subsequently, the Ordnance Corp picked up the Patriot intermediate-maintenance mission and took over the training program, converting ADA MOS 24T-T5 to the Ordnance Corps' MOS 27X Patriot System Repairer in the process. Once Ordnance assumed control, the prerequisites to attend the training changed from ADA career management field (CMF) 14 to CMF 35 (or MOS 27 series) requirements.

The Army filled the course by reclassifying Soldiers from Hawk, Nike-Hercules and other missile systems into the Patriot intermediate-maintenance field. The training time remained between 52 and 59 weeks for these Soldiers, all of whom possessed prior missile and/or radar maintenance experience and training.

The pool of NCOs from the feeder MOS dried up as Hawk, Nike-Hercules and other missile systems were withdrawn from the Army inventory. Faced with this dilemma, the Army had to find a new source of personnel to send through the MOS 27X course. So, the Army opened the training program to any NCO with a general technical/electronics (GT/EL) score of 110 or higher. The MOS 27X course changed from receiving NCOs with missile/radar maintenance backgrounds to receiving students from a variety of backgrounds.

However, despite classes being filled by students with no missile/radar maintenance backgrounds, the curriculum and training philosophy was not altered. It was like teaching physics to students still struggling with their multiplication tables. During this period, the 27X MOS was converted first to MOS 35S Patriot System Repairer and later to MOS 94S Patriot System Repairer in an attempt to align the MOS better with career fields.²

MOS 94S. Several years later, the Army determined that MOS 94S would be converted to an accessions MOS, thus opening it up to newly recruited Soldiers fresh out of basic training (with a EL score of 110 or higher). Again, the basic course philosophy and curriculum remained unchanged. The downside of this was that the Army now had a Soldier with no missile/radar maintenance background who was tasked to master one of the Army's most demanding curricula while, at the same time, learning basic Soldier skills.

To make matters worse, part of the realignment to an acquisition MOS consisted of reducing the total number of MOS 94S sergeants (E-5s) in each unit from eight to four. This caused MOS 94S to become 100 percent over-strength at the grade of E-5 overnight. Realizing this, the Army sent reclassification/resignation option letters to MOS 94S Soldiers in the grade of E-5. Unfortunately, the Army did not allow time for the MOS 94S school to ramp up in support of the new requirement for E-4s and below. This created a "bubble" of several years duration in which E-4 authorizations went unfilled as new enlistees progressed through the ranks.

The first initial enlistment trainees graduated in February 2003. While current numbers of fielded MOS 94S personnel remain quite low throughout the Army, more than 50 percent of the personnel at the units are made up of these initial enlistees. These same Soldiers make up more than 90 percent of sergeants (E-5s) and 20 percent of staff sergeants (E-6s).

The Way Ahead. The good news is that the MOS 94S course nearly has completed a long and painful, but much needed, change in curriculum. The Army recognized the need to tailor the training methods and ideology to our customers (knowledgeable ADA Patriot NCOs, Ordnance Corp NCOs and initial enlistees).

Personnel strengths throughout the Army also have required us to reduce the time it takes to get these Soldiers to the field. The MOS 94S course has been trimmed to approximately 46 weeks—the minimum time needed to put an effective maintenance Soldier in the field. Still, current personnel strengths are not where they need to be; the cur-

rent manning strength is approximately 67 percent.

There is a plan to increase the number of MOS 94S Soldiers in the Army. Retention is the first focus—keeping trained and competent Soldiers who are already in the field. There are retention bonuses available to 10- through 30-level Soldiers in all three enlistment zones. The Army is making every effort possible to get that information to Soldiers coming into their reenlistment windows. We have an approximate 50 percent retention rate for initial enlistees in the MOS.

The next item to be addressed is training numbers. School training seats will increase beginning this year and continue through 2010. MOS 94S is on the critical shortage list and is open to reclassifying students. Historically, the MOS 94S school averages 20 to 22 US graduates per year. By the end of this year, the number of graduates should increase to approximately 44, with an expectation of 50 by the end of 2009.

Patriot's performance in OIF has underscored combatant commanders' request for stronger, more deployable air and missile defense (AMD) forces. MOS 94S personnel assigned to Patriot units provide intermediate maintenance for the Patriot system and are a vital element in all aspects of having a functional fully-deployable AMD unit. The MOS and personnel shortages are being addressed through retention and training changes. While the pain of personnel shortages currently is being felt in the field, there is an end in sight.

Endnotes:

1. Military Occupational Specialty (MOS) 14E Patriot Fire Control Operator has evolved into MOS 14E Patriot Missile System Enhanced Operator/Maintainer. MOS 14T Patriot Launching Station Enhanced Operator has evolved into MOS 14T Patriot Launching Station Enhanced Operator/Maintainer.
2. MOS 27X Patriot System Repairer evolved to 94S Patriot System Repairer, and as an essential member of the Army's weapon maintenance team, the 94S Soldier primarily is responsible for direct and general support-level maintenance on the Patriot Missile System.

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Retention Techniques

—Mitigating Junior FA Officer Attrition

Stereotyped, hollow, hard-or-soft-sell programs are not going to appeal to the junior...[o]fficers we desire to keep in the Army. The men we are interested in have already assessed incentives such as pay, medical benefits and travel, and have made judgments regarding these factors. What must be made plain and clear are the opportunities to perform in a highly

demanding and challenging field which has responsibilities greater than those normally offered by civilian industry to personnel in their twenties and early thirties.

Commander's Guide to the Retention of Junior Officers
Department of the Army

Junior officer retention has fixed itself at the forefront of the US Army's agenda. After years of decreased retention and the marginal success of the Army's recent critical skills retention bonus incentive program, it is clear that officer retention is a more complex problem than previously believed.

Common reasons for leaving the Army range from frequency and length of combat deployments to lucrative job offers from civilian corporations. However, the intangible factor that may be influencing officer retention is job satisfaction.

More than any other branch in the Army, the Field Artillery (FA) feels the strain of nonstandard missions and military transition team (MiTT) requirements.¹ Due to these commitments, FA has to compromise its emphasis on core competency training. Specifically for junior FA officers, skill sets in fire direction, fire support and cannon platoon experience at the battery level are dwindling.

Yet the core competencies of an Artillery officer are not defined solely by providing lethal effects on targets. They are characterized, instead, by the ability to synchronize and coordinate the effects (both lethal and nonlethal) of combat power. The onus to instill this spirit into the minds of junior FA officers must not come from doctrine or the FA School, but from within the FA officer corps itself.

Training and mentoring junior FA officers properly are tasks that must be asserted at the battalion level and below. Job satisfaction, whether high or low, is determined through the skills, knowledge, experience and guidance given and attained at a junior officer's first unit. Job satisfaction, at some point, convinces officers to stay in the FA or to resign.

Proper job placement and rotation, training, counseling and mentorship of today's FA lieutenants must be managed carefully within their units and tailored to each individual. Successfully administering career management and

By Captain Joseph L. Handke, FA

development builds and develops the core competencies and vital skill sets in today's junior officers that are indicative of future leadership success.

Recent Trends. According to the FA Proponency Office, attrition among FA officers increased steadily since 2003 from 6 percent to 14 percent (as of November 2007).² To put this figure into perspective, the FA Proponency Office's current goal is to keep attrition at 5 to 8 percent.³ In general, there are four predominant categories of attrition from the FA: career field designation, branch detail, medical retirement and resignation.⁴

The resignation category is unique because it consists of Artillery officers who not only voluntarily leave FA, but military service entirely. Of the reasons cited for resigning, operations tempo (OPTEMPO) was the predominant factor during the past five years—understandable considering 27 percent of the FA is deployed at any given time (the most of any branch in the Army relative to its total size).⁵

FA's MiTT requirements contributed to the increased OPTEMPO and a sense of disenchantment among many FA officers with regard to their career progression. Whereas officers in table of organization and equipment (TOE) units have the opportunity to serve in key developmental jobs that help progress their careers, FA officers serving on MiTTs must wait until their tours are completed before continuing their FA careers.

For many officers, this is seen as detraction from their career paths. Many junior officers return from a deployment and attend the FA Captain's Career Course (FACCC) only to get assigned directly to a MiTT, deploying soon after graduation. This can lead to cynicism about job assignments and a feeling of dispensability with regard to the Army's employment of FA officers.

Historical Approaches. The current strains are not new or unique; FA officers faced multiple deployments and strains from nonstandard missions during the Vietnam War. Despite fundamental differences between today's volunteer army and the Vietnam-era draft army, Army retention strategies for junior officers published in 1970 are relevant today.

According to the "Commander's Guide to the Retention of Junior Officers," published 19 January 1970, the "biggest failure in the retention effort is the counseling of junior officers by their senior—both commanders and colleagues."⁶ Demonstrating genuine interest in a well-performing young officer's career can be as simple as "a few well chosen words from [the] commander at an opportune moment, concerning [the officer's] present performance and apparent future potential."

Especially during combat operations, quality counseling—readily available anytime and anywhere—is the key to reinforcing excellence and bolstering confidence among high-quality junior officer unsure of their professional futures.

The 1970 publication suggested techniques to increase retention. One technique is to encourage junior officers to continue their education to promote growth as professional—if necessary allowing officers to attend classes during duty hours.

Another technique was placing "selected officers in more responsible positions or in jobs for which they have particular interest or qualification." Moving officers from one job to another may prove unfeasible, but the publication emphasizes the need to place officers in jobs deserving of their experience, ranks and abilities. Placing officers in positions that fail to challenge them explicitly is advised against.

The publication suggests that a sense of prestige in a young officer's position, status and affiliation must be established upon arriving at a unit and will temper



CPT Johnny R. Fry inspects a building with his rifle scope as SGT Ramon A. Ramos pulls security during an operation in Abu Khamis, Iraq, 29 February. Both are A Battery, 2nd Battalion, 12th Field Artillery Soldiers. (Photo by SSG Russell C. Bassett, 4th Battalion, 2nd Stryker Brigade Combat Team, Public Affairs)

his resolve toward remaining in his profession.

Although the 1970 publication is almost 40 years old, it plainly states realistic techniques and programs that can be executed by battalions and batteries in today's Army. The current Army standard for counseling states that "caring and empathetic Army leaders conduct counseling to help subordinates become better team members, maintain or improve performance, and prepare for the future."⁸ Essentially, both doctrines have the same goal—to acknowledge and promote outstanding performance and to retain those exceptional individuals for successful careers.

Theories of Motivation. In *The Motivation to Work*, Dr. Frederick Herzberg defines employee job satisfaction in his Motivation-Hygiene Theory. As Herzberg explains, there are two sets of factors that influence job attitude—motivation and hygiene.⁹

Motivators are why employees enjoy and thrive in their jobs, ultimately giving satisfaction. Examples are achievement, recognition, the work itself, responsibility, advancement and growth. Hygiene factors "create job dissatisfaction, but their presence does not motivate or create satisfaction." Examples of hygiene factors (and their corresponding Army equivalents) are company policy (standing operating procedures and leadership philosophy), supervision, interpersonal relations (command relationships), working conditions, job security, benefits and salary.¹⁰

When compared to the primary reasons that affect resignation in junior FA officers (Figure 1), absence of motivator factors seems to be the primary reason officers are leaving the military. In fact, only one hygiene factor—working conditions—can be related directly to junior officer resignation. Thus, it can be assumed that the absence of motivators is more a significant influencing factor than a lack of job satisfaction.

Another motivational theory is the Expectancy Theory developed by Victor Vroom (Yale School of Management) in 1964. This theory has three main components: valence, instrumentality and expectancy.¹¹ Valence is the "desirability (or undesirability) of a particular outcome to an individual." Instrumentality is the "perceived relationship between the performance of a particular behavior and the likelihood that a certain outcome will result." Lastly, expectancy is the "perceived relationship between the individual's effort and performance of the behavior."

An example of valence would be if a junior FA officer wants the additional duty of battery executive officer (XO), he will work hard and succeed in jobs that prepare him for increased responsibility. Subsequently, expecting that his commander will recognize his potential for more responsibility is an example of expectancy. If he is recognized as a skilled, potential candidate for XO, therefore, his commander will assign him to be his XO (an example of instrumentality).

Applying this theory to retention, commanders and supervisors must counsel junior officers to identify personal goals, the degree of valence pertaining to those goals and the officer's expectancy of obtaining those goals. The supervisor or commander then can give feedback about the practicality of the junior officer's

expectations. The ability to facilitate these expectations (or at least give candid feedback as to their feasibility) creates a level of professional trust between junior officers and their commanders and eliminates any ambiguity or feelings of subjectivity about their goals.

Job Satisfaction. Using both theories, job satisfaction levels can be traced through a junior officer's career from commissioning source to his first unit. Each new lieutenant experiences three basic cognitive phases regarding the military during the first few years of his commission: expectations, reality and potential. Applying proper motivators (through mentorship) and setting goals (through counseling) contribute tremendously to an officer's job satisfaction.

Throughout their commissioning, basic officer training and education, junior officers are convinced that they will be afforded a multitude of quality leadership experiences during their time as lieutenants.

The expectations (valence) that can be derived from this phase of an officer's career are as follows: the potential for leadership worthy of his skills and education, doctrinally sound command relationships with his senior officers, the opportunity to gain invaluable training and combat experience, proper education in his military trade, training on the use of his branch skill set, proper job placement and assignment, and performance-based promotions.

When a FA officer arrives at his first unit, he has certain expectations about his training, as well as the leadership experiences that he should be afforded (expectancy). In today's Artillery, many discrepancies between expectations and experiences are related to hygiene factors. They include leadership versus management in leader positions, the possibility of

Factors	Resignation Reason
Responsibility (Motivator)	Lack of Command Positions
Advancement (Motivator)	"Blanket" Promotions
Work Itself (Motivator)	Military Transition Team (MiTT) Assignments
Recognition (Motivator)	MiTT Assignments
Growth (Motivator)	MiTT Assignments
Working Conditions (Hygiene)	High Operations Tempo

Figure 1: Motivator-Hygiene Factors Influencing Resignations

a poor command climate (company policy and interpersonal relationships), a lack of branch training or poor training available (work conditions), a lack of Artillery training and use, poor job placement and a subjective promotion system.

After a junior officer has had time to compare his expectations against his actual experience, forming his assessment of job satisfaction, a junior officer is faced with the following question, "If I continue serving as an FA officer, will my career continue to satisfy me or not?" Past experiences determine positive or negative instrumentality (and job satisfaction and potential) during initial tours of duty and can be related directly to the presence or absence of Herzberg's motivators.¹²

Recommendations. At the end of his initial tour of duty, an officer generally can be placed into one of four categories, which correspond to the types of workers Herzberg focused his motivation theory on during "job enrichment applications" in 1976.¹³ As shown in Figure 2, the category an officer falls into is determined by his fulfillment, lack of fulfillment, motivator and hygiene factors he experienced.

The commanders' ability to motivate junior officers to value every assignment, relate those experiences to future positions of greater responsibility and give candid, goal-oriented feedback on performance will influence officers who are undecided about continuing a military career.

There always will be officers who know they will leave the service after fulfilling their obligation for their Army-funded undergraduate education. The officers who remain beyond that obligation are the officers that the Army needs (and wants) to retain. Those targeted for retention efforts are those who continue serving though unsure about a full career and those who decide to resign for reasons other than employment or educational opportunities.

Programs providing additional hygiene factors, such as the critical skills retention bonus incentive program, may succeed at retaining officers in the short term; however, retention of FA officers for long-term careers is uncertain. Monetary incentives either "substitute increased hygiene for [a] motivator deficiency," or simply curtail dissatisfaction rather than stimulate intrinsic motivators within professional officers.¹⁴

Based on the trends, 86 percent of cur-

rent junior FA officers have a level of job satisfaction high enough to continue their careers past their first tours of duty. In general, the FA Branch succeeds in setting the conditions needed to maintain a basic level of job satisfaction. Retention programs must focus on professionalism and the value of being a member of a time-honored tradition. This cannot be accomplished at the highest levels of the Army; it must be developed and implemented at the interpersonal levels provided at the battalion and below.

Each FA officer has specific needs and requires personalized career management to create the motivators needed to bolster job satisfaction. This aim must be tailored further to provide junior FA officers with the knowledge, experience and guidance to become an expert fires coordinators and combat arms leaders. This can be accomplished by focusing on objectives that set the conditions for job satisfaction: job placement and rotation, additional and special duties, and unique tasks and assignments.

Job Placement and Rotation. Job placement and rotation during FA officers' initial tours of duty should provide at least one opportunity to serve in a primary

artillery position (fire support officer, fire direction officer, platoon leader or XO). Ideally, an Artillery lieutenant gains the best understanding of traditional Artillery application, employment and function through one assignment as a fire supporter and one assignment in a firing battery.

Emphasis should be on firing battery jobs because an assignment as a fire direction officer or platoon leader might be the last time that a lieutenant has experience with actual Artillery operations before becoming a battery commander, due to nonstandard missions during deployments.

The time allotted to a junior officer's Artillery leadership positions should be at least 12 months to allow time for assessment, development and proficiency. The training opportunities (especially live-fire training), certifications and proficiency developed are imperative to developing and preparing the FA's future battery commanders. The junior

FA officer who is not afforded the time to become a knowledgeable and competent leader at the battery level eventually will struggle through his command plagued by a lack of basic knowledge.

Assignments must be reinforced through mentorship and counseling. Mentorship should focus on the future application of skills acquired at the junior officer level and the importance of taking care of Soldiers. Motivators and hygiene factors that must be implemented into mentorship are responsibility, recognition, growth, achievement, interpersonal relationships and supervision (specifically avoiding micromanagement).

Counseling needs to focus on goal setting through the use of expectancy theory. Once a junior officer has been counseled initially, a career plan should be developed. This allows his commander to measure performance and to validate reassigning the young officer to a position of increased responsibility.

Additional and Special Duties. Many junior officers view additional duties as a nuisance and a deterrent from actual leadership—a gross misconception. Some of the best administrative and leadership experiences that I gained at my first unit were a direct result of my additional duties as a battery XO. All officers need to gain a working knowledge of the Army logistical system, Artillery battery modified TOE and supporting equipment specifications, arms room operations and procedures, and maintenance systems and procedures. Managing these functions and documenting and storing unit records are skills sets that distinguish superb officers from the mediocre.

Although any additional duty has documentation that outlines how to execute it, hands-on experience provides the best training and experience. Mentorship for additional duties should focus on how administrative and logistical operations affect the success of Artillery functions, emphasizing motivators such as growth. Counseling should focus on assigning an officer to additional duties in which he lacks experience, assessing his supervision of those duties and reassigning new additional duties based on present proficiency.

Commanders should distribute the workload evenly among the junior officers and reassign officers once they are proficient in their duties, thus developing officers with knowledge in all aspects of battery operations. A continual change in duties combats complacency, provides new challenges and responsibilities,

	Motivators Fulfilled	Motivators Unfulfilled
Hygiene Fulfilled	Motivated to further service as a military officer	Undecided about full career but continuing with military service with hopes for improvement
Hygiene UnFulfilled	Decided to resign not due to employment or educational opportunities	Decided to resign with follow-on education or career arranged or planned for

Figure 2: Categories of Job Satisfaction

and encourages junior officers to share knowledge.

Commanders must use the expectancy theory to convey the concept that future command is an honor and a privilege (valence). Mastering tactical, leadership, administrative and logistical skills prepares junior officers for success as future battery commanders and staff officers (expectancy). A successful command results in an outstanding experience and an evaluation report that sets them apart from their fellow commanders, opening the door to even greater leadership opportunities (instrumentality).

Unique Taskings and Assignments. The last factor that contributes to job satisfaction is assigning junior FA officers to jobs that are unique with respect to traditional Artillery assignments. In today's highly deployed FA, junior officers are given the opportunity to gain experience with fire direction, cannon platoon operations and fire support as well as nonlethal effects, information operations and even maneuver missions. When these unique jobs arise, commanders and supervisors must make a concerted effort to maintain hygiene factors, provide motivators and engage their junior officers in regular goal-oriented counseling.

Many FA battalions essentially have become maneuver units in Operations Iraqi Freedom and Enduring Freedom, reorganizing their cannon platoons and headquarters sections into mounted patrol teams responsible for missions such as route clearance, cordon and search operations and mounted security. Commanders in these situations must convey the extensive knowledge and tremendous leadership experiences afforded by these new missions. Artillery officers are fires coordinators and planning synchronizers by trade—what better way to understand the maneuver commander's thought processes and needs than to serve in combat as a maneuver patrol leader?

This situation gives commanders an excellent opportunity for daily mentorship focusing on all of Herzberg's

motivators. Counseling during this time should focus on the current tasks' applications to future assignments of increased responsibility—in this case battalion fire support officer and brigade fire support coordinator.

Other jobs that FA junior officers typically have been assigned to recently are information operations (IO) officer, civil affairs (CA) officer and battle captain. These assignments give a working knowledge of integrating civil-military operations, numerous IO assets and maneuver forces, as well as allow officers to understand aspects of the current counterinsurgency fight.

For example, FA officers serving as IO officers are among the few officers in the Army who have experience and expertise coordinating CA, public affairs, combat camera, psychological operations, human intelligence, nongovernmental organizations and Artillery assets as a staff officer.

Growth, responsibility and achievement are the motivators that can be used in mentorship to empower junior FA officers assigned to special staff jobs. Counseling for IO and CA officers should establish goals, and then the supervisor must document progress. Particular to unique staff positions, expectancy can be used in the context that success as an IO or CA officer determines his follow-on job within the unit.

Attrition among junior FA officers is a complex problem. Current incentive-based programs provide the means for the FA to combat attrition for a short time; however the long-term solution must emphasize job satisfaction based in motivators, not hygiene factors.

Junior FA officers desire, and frankly expect, the opportunity to use their leadership training in challenging positions where they will gain professional military skills and experience. But, not all junior FA officers receive the opportunities they desire. Leaders at the battery and battalion levels are the key to helping these officers.

Through mentorship and counseling, proper job placement and rotation, and training in logistical and administrative skills, commanders and supervisors can make even the most mundane task worthy of a junior officer's best efforts.

The commanders' ability to motivate junior officers to value every assignment, relate those experiences to future positions of greater responsibility and give candid, goal-oriented feedback on performance will influence officers who are undecided about continuing a military career.

Either leaders must take the initiative to address junior officer retention now or the Artillery likely will face increased attrition for years to come.

Endnotes:

1. Information extracted from unpublished raw data document titled "FA Captain Attrition 2003-2007: Strength Loss, Percent Loss" provided by LTC Michael J. Gould and maintained by Field Artillery Proponency Office (FAPO), Fort Sill, Oklahoma, 2007.
2. *Ibid.*
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7. *Ibid.*
8. Headquarters, Department of the Army, *Field Manual 6-22 Army Leadership: Competent, Confident, Agile*. (Washington, DC: Department of the Army), 2006.
9. Joseph E. Gavel, *Herzberg's Theory of Motivation and Maslow's Hierarchy of Needs*. (Washington, DC: ERIC Clearinghouse on Assessment and Evaluation), 1997.
10. *Ibid.*, and Ronald E. Riggio, *Introduction to Industrial/Organizational Psychology* (4th edition). (Upper Saddle River, New Jersey: Pearson Education Inc.), 2003.
11. Ronald E. Riggio, *Introduction to Industrial/Organizational Psychology* (4th edition). (Upper Saddle River, New Jersey: Pearson Education Inc.), 2003.
12. op. cit., Gavel.
13. John B. Miner, *Organizational Behavior 1: Essential Theories of Motivation and Leadership*. (Armonk, New York: Sharpe, M.E., Inc.), 2005.
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The author wishes to thank the commanders and leaders who counseled and mentored him, positively influencing his decision to make the FA his career. He also wishes to thank LTC Michael J. Gould, FA Proponency Office, for his help with this article.

Training the Full-Spectrum BCT FSCOORD

By Colonel Kevin M. Batule and
Colonel (Retired) Theodore J.
Janosko, both FA

The Fires Center of Excellence and Field Artillery (FA) School leadership at Fort Sill, Oklahoma, recognizes a need to train brigade combat team (BCT) fire support coordinators (FSCOORDs) to plan, coordinate and synchronize lethal and nonlethal fires. Almost a full five years into a new era characterized by persistent conflict, the school has “unveiled” a professional military education course that recognizes this wholly new operational environment.

Acknowledging that the nature of fires as a warfighting function is different than previously defined, the BCT FSCOORD course trains fires leaders to function effectively in today’s operating environment that demands versatility across a full spectrum of operations. This spectrum ranges from an “enabling” environment, requiring nonlethal skills, to a more traditional “disabling” environment, requiring more destructive or lethal activities.

The broader context of the new definition of fires in *FM 3-0 Operations* is also the foundation for a broader, more sophisticated application of targeting—one whose description includes two new terms—nonlethal and command and control warfare. The full-spectrum BCT FSCOORD must understand the nature of these unique, sometimes very different environments and how a premeditated application of different targeting objectives complements movement and maneuver in either environment.

This article outlines the history and background of why the FSCOORD



LTC Gary W. King, future 1st Battalion, 37th Fires Battalion commander, focuses downrange as part of Pre-Command Course training in April at Fort Sill, Oklahoma. (Photo courtesy of COL Theodore J. Janosko, Retired)

course was developed. It identifies several of the pertinent effects and symptoms of doctrinal changes, the Army’s modular force and evolving nonstandard missions on the Army’s fires personnel, proficiency and overall readiness, especially in the BCT. It also describes the course, its purpose, evolution and value as a vital contributor to combined arms proficiency in today’s full-spectrum operations.

New Approach to Operations. For many years and throughout numerous successful military operations, the combined effects of artillery, mortar and close air support weapons’ lethal delivery capabilities as well as the fire support cell’s advising, coordinating and synchronizing efforts yielded a desired effect for the maneuver commander—fires that set the conditions for maneuver. In linear set-piece engagements of the past and even in today’s high-end offensive and defensive operations, our Army enjoyed tremendous tactical and operational success in synchronizing lethal fires and maneuver. The key contributors to this warfighting proficiency were arduous preparation sessions at the combat training centers and a healthy attention to continuous, repetitive unit training on this important warfighting task.

However, our experience in the present conflict compels the Army to reexamine how we approach operations in a

full-spectrum environment. The new *FM 3-0*, published in February 2008, indicates the new direction our Army is headed based on a close scrutiny of what recent experience means with a future of persistent conflict.

Full-spectrum operations means that FA gunners (and many other warriors) must be prepared to execute a wider scope of their duties that challenge our warriors’ skill sets. This full-spectrum environment, as described in *FM 3-0*, places a new and important emphasis on “enabling” tasks, broadening a brigade combat team’s traditional responsibilities that once centered mostly on “disabling” tasks—endeavors that armies have practiced for centuries.

In a joint coalition area of operations (AO), pursuing nonlethal pursuits to achieve desired security outcomes have influenced our planning, coordinating and targeting activities much more than anticipated. As can be expected, the new definition of fires in *FM 3-0* includes the words “lethal, nonlethal and command and control warfare.”

Concurrently, the Army’s efforts to maintain stability, influence the environment and produce conditions for stability since May 2003 have jeopardized FA’s ability to maintain proficiency in both lethal and nonlethal skills. Unlike lethal operations, nonlethal tasks require a significant allocation of time, energies and assets.



Due to their assigned missions in theater, some BCT fires battalions have not executed any traditional lethal delivery roles while deployed. The commander of these organizations—traditionally the BCT's most trained and centrally-selected Field Artilleryman and rightfully the BCT's FSCOORD—has focused most, if not all, of his energies on the security and maneuver missions inherent in owning his AO. Consequently, many brigade fire support officers, with little or no formal FSCOORD training, have become the BCT's FSCOORD in a complex, nonlethal environment without the oversight of the more experienced, senior leader.

While the question of who should be the brigade (or even division) FSCOORD is certainly a pertinent and valuable topic to debate today, this article concentrates on the training necessary to reverse this trend. Formal training and education in this expanded fires advisor endeavor cannot be overlooked. They are the baseline components of leader development and continue to form the foundation for applying doctrine to produce a successful military outcome.

The BCT commander experiences many challenges in using his lethal and nonlethal fires to produce successful military outcomes. The combat training centers (CTCs) have observed that "modularization" and nonstandard Operation Iraqi Freedom (OIF) duties have wreaked havoc on the fire support system, leaving many personnel untrained or having lost their fires tactical and technical proficiency.

Maneuver leaders now are responsible for fire support training, certification and employment, but are not trained or resourced to perform these tasks. In addition, the fire supporters' equipment has been given to other sections and is not available to the fires personnel for training or execution at the CTCs. The feedback the school has received from observer/controllers is that they believe units no longer can retrain themselves and will require outside resources and help to do so.

The ingredients of successful fire and maneuver always have been unit training, collective unit evaluation and subsequent "proofing" in a CTC rotation. With precious little time available and a force generation model that overwhelms unit training plans, it is no surprise that the institutional pillar of leader development now must take on a wider and broader role—to arrest a growing atrophy in

traditional lethal skills and to expand the important nonlethal ones. A situation that probably is similar to situations in other combat arms branches.

New Training—BCT FSCOORD Course. In response to the phenomenon of an army at war in a full-spectrum environment, the FA School has implemented a series of mobile training and new course initiatives. The BCT FSCOORD course is one of those initiatives.

After conducting two pilot FSCOORD courses at the BCT to corps level in 2007, the decision was to focus the FSCOORD course at the BCT level—the common building block of the Army's modular force.

The Training Gap. This focus fills in a gap in fires training. Division or higher FSCOORDs can learn about operational fires by attending the Joint Operational Fires and Effects Course (JOFEC), and the Captain's Career Course prepares young captains to be battery commanders and task force fire support officers. Although intermediate level education (ILE) offers majors several electives and advanced application programs that help prepare them as members of a BCT fires cell, majors cannot take all of the electives. In addition, enlisted personnel in fires cells are not eligible to attend ILE.

Accordingly, the FSCOORD course concentrates on the BCT fires leaders—senior NCOs through lieutenant colonels.

Course Overview. The course was designed under the direction of Colonel (P) Richard C. Longo, Assistant Commandant of the FA School. His paramount measure of success for the course is that each student be confident that upon graduation he can deploy immediately to OIF or Operation Enduring Freedom (OEF) and be an effective BCT fires cell member. To this end, the course, based on current doctrine, includes a review of traditional fire support basics and uses the experiences gained from CTCs, deployed units in theater and combat-experienced FSCOORDs on post.

The FSCOORD course is not static, but will evolve to meet the needs of BCT commanders and fires personnel. Also, to ensure the course stays on target, students and their BCT commanders are contacted six months after completing the course to see if the training was on target.

Curriculum. The course incorporates the full range of desired skill levels, targeting principles and processes necessary to synchronize lethal and nonlethal fires and helps employ command and

control warfare. The course is broken into sections using a building block approach (see Figure 1). This building block approach builds a solid foundation for the complex practical exercises that will follow.

Some of the basic classes—BCT fires cell, Army Battle Command Systems (ABCS) and the military decision-making process—are taught using interactive multimedia instruction and emphasized by instructor review and practical exercises. Other basic classes include the Theater Air-Ground System, the joint air tasking order and air support requests. Video-teleconferencing (VTC) is used between the classroom and the CTCs so the students can learn about and discuss recent observations and trends.

Students learn how to establish the BCT fires cell and plan fire support, and then the course moves on to coordinating and executing fire support.

In a simulated counterinsurgency environment, each "coordinate, execute and assess" module is "tailored" to an OIF scenario, although some examples may include Kosovo or CTC scenarios. Students also spend an afternoon with a Middle East expert to become more aware of the Iraq and Afghanistan cultures.

An entire day is devoted to learning the fundamentals of information operations and how to apply the targeting process to this new operational discipline. The

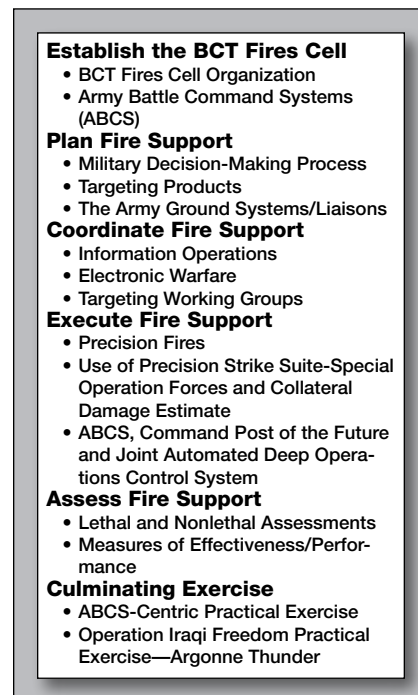


Figure 1: Brigade Combat Team (BCT) Fire Support Coordinator (FSCOORD) Course Overview

electronic warfare block covers some of our electronic protect and electronic attack capabilities. The students learn how to assess fire support after executing fire support.

Students become familiar with the Joint Forward Observer program, Precision Strike Suite-Special Operation Forces, collateral damage estimate, and airspace command and control issues. They are also introduced to the capabilities and challenges of using Guided Multiple-Launch Rocket System (GMLRS) and Excalibur in theater. The students receive hands-on training on the Command Post of the Future and the Joint Automated Deep Operations Control System and complete a digital practical exercise using an ABCS suite.

The students finish with a multiple-day culminating exercise based on an OIF scenario that draws on all the information and skills learned.

The students participate in two VTCs with deployed units (OEF and OIF) and meet with senior officers who have combat FSCOORD experience. Many students have commented that the greatest benefit they received from the class was from the interaction with fellow students, instructors and experienced senior leaders.

Each student receives a disk with all unclassified classes and pertinent orders along with hard copies of key publications. Each graduate is granted a reach-back capability to any of the instructors via the FSCOORD websites on Fires Knowledge Network or by NIPRNet or SIPRNet (Unclassified but Sensitive or Secret Internet Protocol Router Network), email or phone.

Class	Report Date	Start Date	End Date
506-08	13 July	14 July	25 July
507-08	17 August	18 August	29 August
501-09	13 October	14 October	24 October
502-09	30 November	1 December	12 December

Figure 2: The remaining FSCOORD classes for this calendar year are as listed.

Upcoming classes. Seats are still available for all upcoming FSCOORD classes (Figure 2). To enroll in the course, contact Major Thomas D. Zivkovic at thomas-zivkovic@us.army.mil or at 580-442-4508.

The BCT is a powerful unit with organic enablers and wide-ranging capabilities. It is essential that all combined arms personnel understand their roles and responsibilities to help the maneuver commander accomplish his mission. Vital to unleashing the brigade's tremendous capabilities is a fundamental understanding of how to plan, coordinate and synchronize lethal and nonlethal fires. The BCT FSCOORD course is designed specifically to achieve this combined arms imperative.

The Fires Center of Excellence and FA School are committed to cultivating the most productive instructional methods to develop leaders who can plan, coordinate and synchronize lethal and nonlethal fires and to helping the BCT commander properly prepare his fires cell for full-spectrum operations. These efforts are an important ingredient in a formula that will enable the maneuver commander to continue to dominate any environment. *Artillery Strong!*

Colonel Kevin M. Batule, Field Artillery (FA), commands the 428th FA Brigade, formerly known as the 30th FA Regiment, FA School, Fort Sill, Oklahoma. Previously, he was a National Security Fellow at the John F. Kennedy School of Government at Harvard University. He commanded the 2nd Battalion, 320th FA (2-320 FA), 101st Airborne Division (Air Assault), deploying the battalion for Operation Iraqi Freedom (OIF) and participating in combat operations in Najaf, Karbala and Hillah, followed by stability operations in Mosul. He served as a Gunnery Instructor for two years in the FA School and, in the 101st Division, as the Assistant Fire Support Coordinator and Brigade Fire Support Officer (FSO) in the Division Artillery and S3 and Battalion Executive Officer (XO) in 2-320 FA.

Colonel (Retired) Theodore J. Janosko, FA, is the Project Lead and Senior Mentor for the Fire Support Coordinator (FSCOORD) course. He commanded V Corps Artillery during the initial combat operations of OIF. He also was the V Corps Fire Support Coordinator (FSCOORD). He commanded the 30th FA Regiment; the 1-319th FA, 82d Airborne Division, Fort Bragg, North Carolina; and two batteries. He has worked in every level of fire support elements from company to corps. He also served as the XO of 2-41 FA, 3d Infantry Division (Mechanized) in the Persian Gulf during Operation Desert Storm, and later commanded the battalion during its deactivation.

2008 AUSA Fires Symposium—15 to 17 July

The 2008 Association of the US Army (AUSA) Fires Symposium will be held from 15 to 17 July 2008 in Dallas, Texas, at the Fairmont Hotel. It is open to all AUSA members, active duty, Reserve Component and Army National Guard officers and Soldiers.

The theme for the symposium is "Opportunities for Fires." The symposium's purpose is to provide industry leaders and Army leadership insight into the challenges faced by the Fires community.

The planned speakers for this year's symposium include Chief of Field Artillery, Major General (MG) Peter M. Vangjel; Chief of Air Defense Artillery (ADA), MG Howard B. Bromberg; the Secretary of the Army, Dr. Preston M. (Pete) Geren; the Deputy Commanding General of the Army Capabilities Integra-

tion Center, Lieutenant General Michael A. Vane; and several other senior Army leaders. Also, Raytheon Senior Executive Daniel L. Smith will present an industry perspective of the challenges facing the Fires community.

This is the second annual Fires symposiums planned and conducted by AUSA. Last year, the inaugural Fires symposium was held in September and 200 attendees were welcomed by MG Vangjel. MG Vangjel and MG Robert Lennox, former Chief

of ADA, briefed the Fires Symposium attendees on the movement of the ADA School from Fort Bliss, Texas, to the Fires Center of Excellence at Fort Sill, Oklahoma, as part of the Base Realignment and Closure (BRAC) process that is scheduled for completion in 2011.

Additional registration information, fees and directions can be found on the AUSA Website at <http://www.ausa.org>.

1-44 ADA Sentinel Platoon Overcomes Obstacles in Afghanistan

By Major Tanya L. Kabel-Ballard and First Lieutenant James L. Wagner, both AD

Members of the Sentinel Platoon, *Watchdaws*, Headquarters and Headquarters Battery, 1st Battalion, 44th Air Defense Artillery (HHB/1-44 ADA), 31st ADA Brigade, based out of Camp Casey, Korea, have been deployed to Afghanistan in support of Operation Enduring Freedom since February 2007. The *Watchdaws* combined with Soldiers from HHB/1-188 ADA (Rapid Aerostat Initial Deployment), of the Grand Forks, North Dakota Army National Guard, and the perimeter defense forces to form C Company, Special Troops Battalion, 82nd Airborne Division. The three units quickly meshed into one and focused on the many different force protection missions assigned.

The *Watchdaws* operate Sentinel radars throughout the Afghanistan area of operations. The primary mission is to provide early warning and airspace control. Most of the platoon is based at Bagram Airfield while other radar teams operate from forward operating bases (FOBs) throughout eastern Afghanistan.

Military Occupational Specialty (MOS) 94M Radar Repairer Soldiers routinely perform or supervise direct- and general-support level maintenance on ground-based sensors (Sentinel) and Firefinder radar electronic systems. However, in Afghanistan, this is a challenge.

Challenges. Afghanistan's harsh climate adversely affects the radars significantly. Extreme temperatures from winter cold to summer heat and the blowing sand require the Soldiers to perform more maintenance than usual. Dry rot on seals and dirty air filters are a continuous problem. Daily preventative maintenance checks and services, such as the cleaning of air filters, blowing out the dirt and dust from inside the radars' compartments and weekly lubing of components, are required to maintain the equipment.

The *Watchdaws* tried to pull weekly maintenance on each of the radars initially, but with the unpredictable flight schedule between the FOBs, it was difficult to get manifested on a sortie and get to each of the FOBs every week. They had to rely on the operators to pull daily maintenance and to "keep an eye on" the wear and tear the heat and blowing sand caused.

To address the transportation problem, the 94M Soldiers were based out of two of the more remote FOBs, and Raytheon's Sentinel field service representative was based at Bagram. Now when a radar goes down, the 94M troubleshoots it to find the broken part, and the field service representative gets the part from the warehouse on Bagram and ships it to the necessary FOB. In most cases, the new part arrives at the



Steve Farthing (left), Raytheon Sentinel field service representative, SPC Doug Tindall (center) and PFC John Geoffroy, Sentinel operators of C Company, Special Troops Battalion (C/STB), 82nd Airborne Division (82 Abn Div), perform maintenance on the Sentinel radar at Bagram Airfield, Afghanistan. (Photo by 1LT James Wagner, C/STB, 82 Abn Div)

FOB within a day or two, depending on weather conditions and flight schedules.

Nonstandard Missions. Soldiers based at Bagram are assigned numerous missions outside the traditional ADA realm. These additional missions include providing personnel for the base defense operations center (BDOC), security for an entry control point (ECP) and Bagram's perimeter defense, and maintaining perimeter defense sensors. The Soldiers, though not trained for any of these specific missions before the deployment, adapted quickly and perform the missions professionally and efficiently.

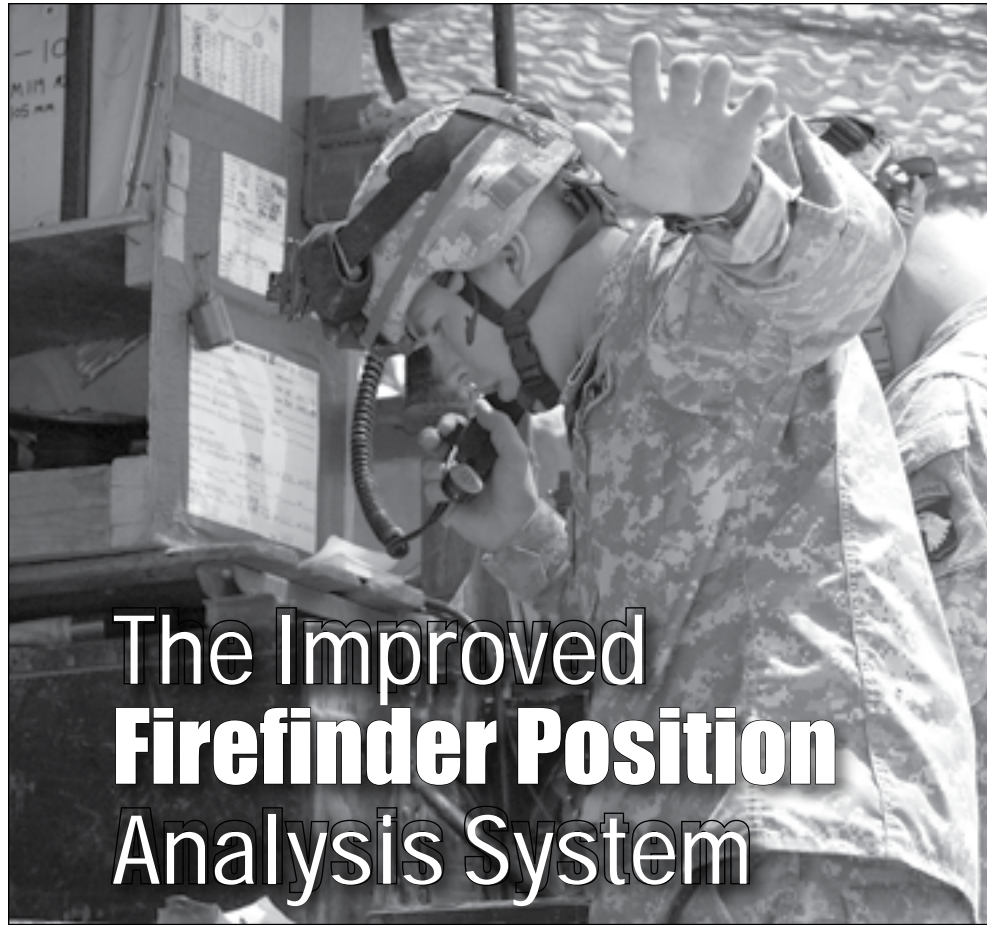
The unit ensures the Soldiers cross train on each others' duties. This enables the Soldiers to rotate duty positions, serve in the BDOC, as a perimeter rover and on the security force at the Egyptian Field Hospital ECP, as well as maintain the Sentinel radar. Rotating assignments helps the Soldiers ward off complacency, often a "side-effect" of long deployments. The *Watchdaws* quickly learned about proper force protection standards, how to operate a small ECP effectively and efficiently, and about how to protect a large airfield's perimeter fence line. The *Watchdaws* have to be prepared for any type of mission and be flexible because, although air defense is their specialty, the needs of the Army come first.

While the air and missile threat in theater is considered low, the *Watchdaws* play an essential role, providing force protection and security for forces both on the ground and in the air.

Despite harsh weather, transportation problems, cross-training requirements and other challenges, the versatile *Watchdaws* accomplished every mission.

MAJ Tanya L. Kabel-Ballard, AD
Chief of Professional Military Education
US Army ADA School, Fort Bliss, Texas

1LT James L. Wagner, AD
Commander, C Company
Special Troops Battalion, 82nd Airborne Division
Bagram Airfield, Afghanistan



The Improved Firefinder Position Analysis System

The counterfire battle is not a separate battle, but one aspect of the overall combined arms fight. As such it must be properly integrated and synchronized with all elements of the maneuver commander's battle plan. Successful counterfire operations will complement all aspects of the combined arms battle.

Field Manual 3-09.12 Tactics, Techniques and Procedures (TTPs)
for Field Artillery Target Acquisition (TA)

Defeating indirect fire attacks in a counterinsurgency (COIN) environment is a complex and often frustrating operation because these attacks can and will come from any direction at unpredictable times. In a COIN environment, the proper planning, positioning and orientation of TA sensors and observers watching over named areas of interest (NAIs) and counter-mortar and -rocket patrols are a few of the TTPs needed to identify and defeat enemy indirect fire attacks.

The Firefinder Positioning Analysis System (FFPAS) is a powerful planning tool that Q-36 and Q-37 Firefinder radar sections, brigade and division TA personnel and fire supporters can use to analyze the positioning of radars and their coverage and to confirm or deny the probability of acquiring enemy indirect fire attacks based on the positioning and orientation radars.

The initial FFPAS units (see "Firefinder Position Analysis System" by Lee R. Moyer and Chief Warrant Officer Five Joseph A. Stephens in the July-August 1996 edition of *Field Artillery* online

By Christopher B. Fish and Chief
Warrant Officer Three Michael V.
Murray, FA

at sill-www.army.mil/famag/) have been upgraded due to a combination of user-generated requests and preplanned product improvements. These upgrades include adding a capability for the AN/TPQ-36(v)7 and AN/TPQ-36(v)8 radars, adding a suite of new FFPAS tools and modifying the software so it can run on laptop personal computers.

This article reexamines the basic principles of the FFPAS software and the newer features and their value to the user.

Deploying Without FFPAS. The Military Occupational Specialty 13R FA Firefinder Radar Operator Basic NCO Course teaches FFPAS, but it is the user's responsibility to become proficient.

At the National Training Center (NTC) at Fort Irwin, California, it has been observed that some units and Firefinder radar sections prepare to deploy without FFPAS. Of the units that have FFPAS,

PFC Brett Myles, radio operator, 1st Battalion, 320th Field Artillery (1-320 FA), relays coordinates for a counterfire mission in Mahmahdiyah, Iraq, 25 April 2007. (Photo by SPC Kelly K. McDowell, 2nd Brigade Combat Team, 101st Airborne Division)

some do not have a complete working knowledge of the program and its capabilities.

The NTC coaches units to use FFPAS as part of their military decision-making process when planning potential Firefinder radar sites, so most units that come to NTC before deploying to theater do have a basic understanding of the program. FFPAS can be used to evaluate radar positioning plans ensuring NAIs and other indirect fire hotspots (developed based on historical indirect fire attacks) have a high probability of being acquired by Firefinder radar if an enemy fires from those areas.

Background. FFPAS has been used by the Army since the spring of 1996 and, since that time, has undergone a series of upgrades and enhancements jointly funded by the Marine Corps and the Army. FFPAS is a software tool that predicts the site-specific weapon location performance for Firefinder radars for a wide range of potential weapon placements and characteristics. The basic system-block diagram is shown in Figure 1.

Given a specific Firefinder radar position and operational setup and by using the terrain-elevation database specific to that site combined with detailed weapon and radar models, FFPAS estimates the probability of location (the percent of shots that will be tracked by the radar) and location accuracy (how correct the radar's computed firing location is) for any weapon firing. This performance estimation is important whenever there is any significant variation in the region of interest's terrain elevation because of the restrictions imposed on the radar's useable elevation coverage. FFPAS predicts how the radar will perform in these scenarios before the radar is positioned and in operation. The system is automated, easy to use and one of the

SSG Scott W. Huff, 2-77 FA, conducts a screen angle plot with a Firefinder Positioning Analysis System to determine if the Q-36 radar system can track enemy indirect fires from a named area of interest as part of a scenario conducted at the National Training Center, Fort Irwin, California. (Photo by CW3 Michael Murray)



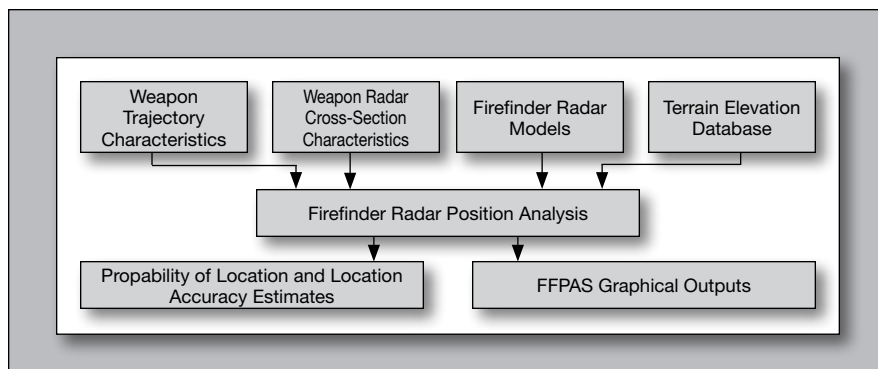


Figure 1: Firefinder Position Analysis System (FFPAS) Block Diagram

most comprehensive siting and training tools available for these purposes. The software is more portable now that it can be installed on laptops. (See Figure 2 for FFPAS benefits.)

Technology Service Corporation in Trumbull, Connecticut, began developing the product for the US Army in 1995. FFPAS is used by the US Army and Marine Corps and as a training aid at the Field Artillery School at Fort Sill, Oklahoma. FFPAS also supports US troops at military bases worldwide, including South Korea, Bosnia, Germany, Afghanistan and Iraq.

FFPAS Tools. The single most important output of the FFPAS tool is the “screen angle plot,” which shows the terrain-height profile, the radar-search fence, the target trajectory and the probability of location and location accuracy performance. A condition color (green,

yellow or red) is provided indicating if the radar is providing good, fair or poor performance, respectively, relative to the system requirements. A sample screen angle plot in Figure 3 on Page 32 shows a combined Artillery exercise in a challenging environment with significant variation in terrain elevation.

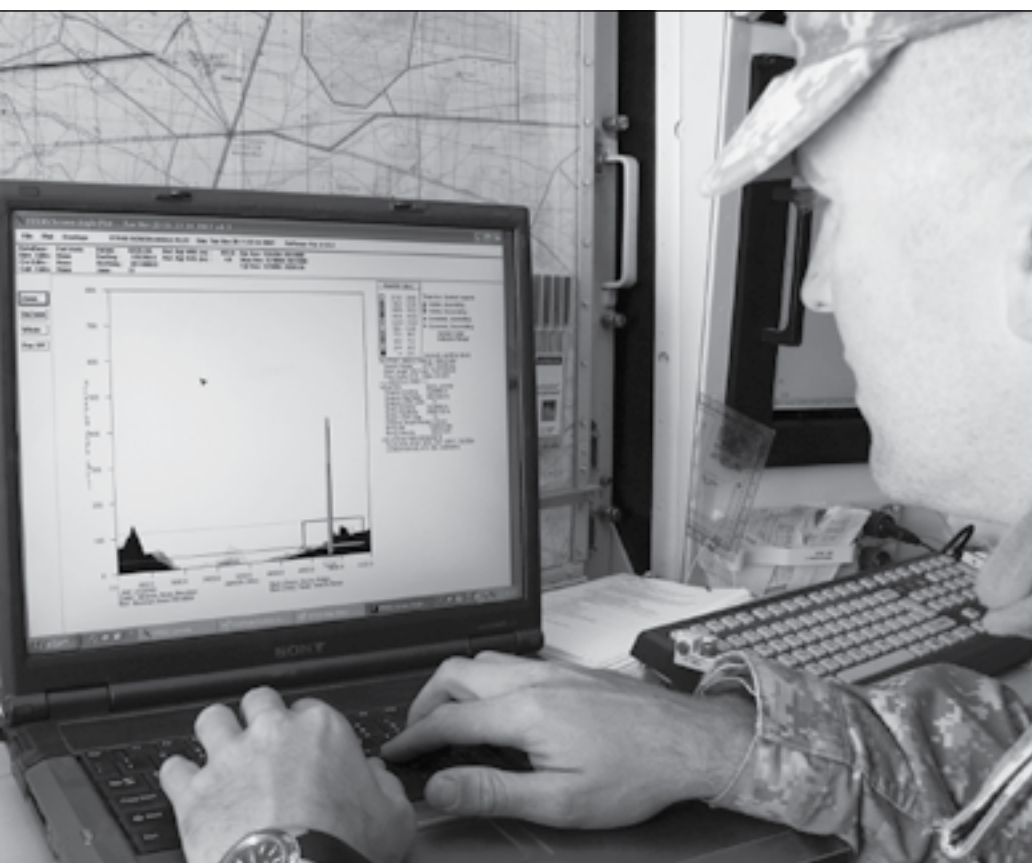
After the product grew to provide “hostile mode” capability for all Firefinder radars, the following additional capabilities or tools were added.

Area-to-Area Analysis. The “area-to-area analysis” capability allows the user to enter and evaluate four-sided convex quadrilaterals when specific firing and impact locations are not known or when the firing and impact locations are known to be in extended areas. The areas are first evaluated with low, medium or high resolution. Then the user gets the composite information to determine if

the radar performs well or should be moved to another location that may produce more favorable weapon location results.

Area-to-Point Analysis. “Area-to-point” and “point-to-area” analyses also can be conducted. In one example of a terrain plot for an area-to-area analysis, low resolution is used for the firing area in the upper right, high resolution is used for the impact area in the lower left, and 64 separate rocket firings are evaluated. This example resulted in 53 separate rocket firings that produced condition “green” or “good,” three that produced condition “yellow” or “fair” and eight that were considered non-specified (condition “white”). These results indicate that the radar coverage of the specified firing area would be acceptable with some room for improvement. So, the operator would be advised to optimize the radar siting or relocate the radar to achieve the desired results, which is for all of the indicators to be green, meaning 64 out of 64 shots would meet the performance requirements.

Multiple-Weapon Analysis. The “multiple-weapon analysis” capability greatly expands on the single-weapon analysis capability, whereby multiple simultaneous and independent weapons-fire and volley-fire analyses can be conducted. For multiple weapons, the user can enter as many as five different weapons of any type with distinct firing and impact points. FFPAS analyses provide probability of location and location accuracy estimates for all the weapons based on the order the weap-



- Determines suitability of any selected site.
- Optimizes siting of the Firefinder radars.
- Optimizes performance of the Firefinder radars.
- Provides rapid assessment of alternative radar sites.
- Provides analyses that is more comprehensive than manual analyses.
- Provides insight into operational problems in the field.
- Builds user experience and confidence in radar site selection.
- Provides the user confidence in successfully accomplishing the mission.
- Is compatible with other radar systems.

Figure 2: Benefits of Using FFPAS

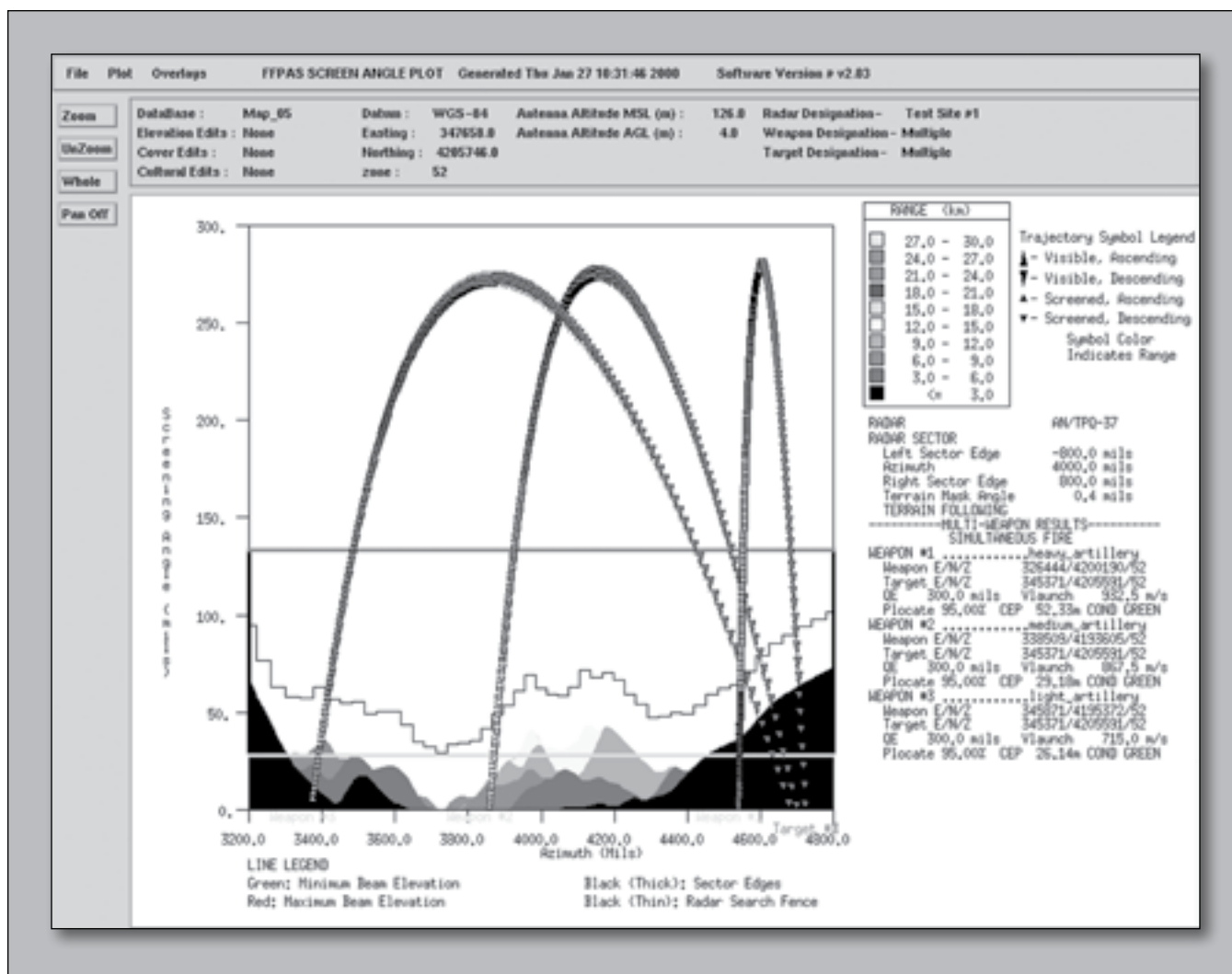


Figure 3: FFPAS Screen Angle Plot

ons go through the search, verification and tracking processes. The increase in search-scan time that occurs as radar resources are allocated to the tracking function specifically is taken into account. This capability gives a user confidence that the radar can perform adequately when there are multiple, simultaneous threats to the troops.

Volley-Fire Analysis. For “volley-fire analysis,” the user can define a battery of three to six weapons of the same type with a spatial separation in the firing unit and a time spread in the weapon firings. FFPAS determines the probability of location and location accuracy for the fire unit as a whole.

Networked-Radar Coverage. “Networked-radar coverage” is one of the newest capabilities of the FFPAS software, with which the FFPAS user can specify the locations and setup parameters of as many as seven different Firefinder radars (in any combination)

and perform simultaneous performance analyses for the entire network of radars. This capability shows the overall radar coverage in a large area of operations and quantifies the relative location performance of multiple radars against a given set of threat trajectories.

High-Fidelity Radar. The FFPAS Version 4.3 software contains high-fidelity radar models for all the Firefinder radars. The search, verification, tracking and location models in FFPAS follow—as closely as possible—actual radar-system operation. The precise beam-by-beam emulation approach of the software allows for an accurate and realistic simulation of the radar functions as the hostile or friendly weapon is launched, detected in a search beam, verified and then tracked.

Friendly-Fire Mode. The “friendly-fire mode” analysis performs similarly to the hostile mode in that it provides weapon location performance. The

friendly-fire setup procedure in FFPAS emulates the procedure used in actual system operation and provides the same error and warning messages if an improper friendly-fire exercise is being conducted. In addition, the analysis takes into account any variation in system parameters from the hostile mode.

Weapons Definition. The “new weapons definition tool” allows the user to model and evaluate threats that might be different from standard US weapons. This could be valuable in other areas of conflict.

Stored within FFPAS are models for US mortars and artillery based on data supplied by the US government. However, if a user knew that an enemy’s higher-drag artillery shell, for example, did not achieve the stated range, then the user could reconstruct the altered trajectory with the entry of the proper parameters such as range or velocity. Additionally,

if intelligence sources could provide radar cross-section data for this weapon, that information could be entered into FFPAS by inserting a file. The rocket capability also has been expanded and now allows for the entry of parameters, such as burn time and burnout velocity among others.

Performance Assessment. The “performance assessment” capability helps users by identifying the possible reasons for poor weapon-location performance and identifies possible remedies. Among the many reasons for poor performance are excessive weapon angular rates as seen by the radar, excessive elevation variation of the search fence in challenging terrain, excessive range rates determined during verification, the formation of an inadequate track history and the failure of specific in-track and end-of-track discriminates. Possible remedies for all radars include the adjustment of the mask angle setting or modification of the azimuth sector. For the AN/TPQ-36 radar, additional remedies include the modification of the amount of video integration or frequency-code usage. In some cases, radar site reselection may be the only viable remedy. The rapid evaluation

of alternate sites is one of the primary functions of FFPAS.

An online help and tutorial capability was added to help train the user. Online help provides the user with the appropriate information from the FFPAS Operator’s Manual, and tutorial examples of the various modes and features allow the user to see how a basic weapon analysis is performed for each of the many capabilities FFPAS has.

Despite FFPAS already being a valuable and versatile tool, another series of improvements is in the works as the developer and government work together to enhance its utility for military personnel in the field. Topics currently under discussion include a map-overlay capability, performance prediction in the presence of rain, a database editor that will allow the inclusion of cultural features such as buildings, and the addition of the lightweight countermortar radar.

FFPAS Version 4.3 was released in January 2007. For more information about FFPAS, contact Chief Warrant Officer Four Eric Adair, Assistant Product Manager Radars, at eric.adair@us.army.mil, or Christopher Fish of Technology Service Corporation at ffpas@tsc.com.

Christopher B. Fish is a Senior Scientist at Technology Service Corporation, involved in all aspects of the Firefinder Positioning Analysis System (FFPAS) software design, development and implementation. He performed FFPAS operator training at Fort Sill, Oklahoma, and Camp Stanley, South Korea. Previously for the corporation, he helped on the AN/TPQ-36(v)8 Firefinder support contract, supported the Radar Siting System development and participated in radar evaluation and software simulation efforts on joint surveillance, target attack radar system (JSTARS) support contract. He has an MS in Electrical Engineering from Rensselaer Polytechnic Institute through the Hartford Graduate Center, Connecticut.

Chief Warrant Officer Three Michael V. Murray, Field Artillery (FA), is the Senior Radar and Targeting Observer/Controller (Wolf 36) at the National Training Center at Fort Irwin, California. He served as the Joint Fires and Effects Targeting Officer for the Southern European Task Force (SETAF) for the Combined Joint Task Force-(CJTF)-76 during Operation Enduring Freedom VI. He also served as a Q-36 Radar Section Leader for 1st Battalion, 10th Field Artillery, and as the Brigade Targeting Officer during Operation Iraqi Freedom, all in the 3rd Brigade, 3rd Infantry Division, at Fort Benning, Georgia.

2008 *Fires* Photo Contest Deadline 1 August

The 1 August submission deadline for the 2008 *Fires* Photo Contest is approaching quickly. The competition is open to any military or civilian, amateur or professional photographer.

Scope and Purpose. Photos should capture images that tell the story of today’s Army and Marine Field Artillerymen or Air Defenders in the War on Terrorism (WOT) or in training between June 2007 and June 2008. These photos may appear as a cover or other shots for future editions of the magazine, as part of the Chief of the Fires Center of Excellence poster series or in other esprit de corps or strategic communications projects.

Two Prize Categories—Six Prizes. A First Place prize of \$500, Second Place prize of \$200 and Third Place prize of \$75 will be awarded in each of two categories: 1) Training for Combat/Stability Operations and 2) Actual Combat/Stability Operations. Each entrant can submit three photographs for the contest.

SGT Mike Pryor, 2nd Brigade Combat Team (2 BCT), 82nd Airborne Division (Abn Div) Public Affairs, won 1st Place, Category I, Training for Combat/Stability Operations, in the 2007 *Fires* Photo Contest with this photo. It depicts an airborne Artilleryman from B Battery, 2nd Battalion, 319th Field Artillery (Airborne), 2 BCT, 82nd Abn Div, parachuting while fellow Soldiers prepare to fire a 105-mm howitzer during a heavy-drop exercise at Sicily Drop Zone, Fort Bragg, North Carolina, on 4 October 2006. Pryor also won 1st and 2nd place in Category II.

The winning photos will be published in *Fires* and posted in the magazine’s Photo Gallery on our website at sill-www.army.mil/firesbulletin/.

Submissions. Submit your photos to *Fires* Bulletin via email, CD, zip disk or file transfer protocol. Email images to the *Fires* Bulletin at firesbulletin@conus.army.mil. Please submit only one image per email. Mark the subject line as “2008 Photo Contest/Photo #1 (2 or 3), Entry Category—Your Last Name.”

For more information on the contest rules, please visit our website at sill-www.army.mil/firesbulletin/contest.asp. If you have further questions, call the *Fires* staff at DSN 639-5121/6806, commercial at (580) 442-5121/6806 or email us at firesbulletin@conus.army.mil.



TA Platoon Leader in the BCT Fires Cell

While leaders often misunderstand the role and responsibilities of the target acquisition (TA) platoon leader or Military Occupational Specialty (MOS) 131A Field Artillery Targeting Officer, this understanding can be a key to the success of a brigade combat team (BCT).

This misunderstanding is due to two reasons—in 2007 the 131As or TA platoon leaders were transitioned from their traditional role as AN/TPQ-36 and AN/TPQ-37 radar section leaders and technicians to staff officers and integrators, and doctrine does not yet define the MOS' duties and responsibilities clearly or even where TA platoon leaders should be located.

Field Manual (FM) 3-09.12 Tactics, Techniques and Procedures for Field Artillery Target Acquisition currently is under revision and will provide a duty description and the duties and respon-

By Chief Warrant Officer Three Michael V. Murray, Major John D. Williams and Warrant Officer One James R. Smotherman, all FA

sibilities of the TA platoon leader when it is published.

But until *FM 3-09.12* is published—in an effort to help leaders place their TA platoon leaders where they can best affect the fight—this article examines the lessons learned, insights and proposed duties and responsibilities compiled by observers/controllers at the National Training Center (NTC) at Fort Irwin, California.

Larger Scope. The warrant officer one or chief warrant officer two serving as the TA platoon leader in a fires battalion (replacing the former O1 billet) now has a larger scope to focus on than they

did before the transition. In addition to the Q-36 and Q-37 radars, a TA platoon leader has a lightweight countermortar radar (LCMR), a meteorological (Met) section and a Field Artillery (FA) survey section in his platoon.

Although assigned to a fires battalion, the Q-36, Q-37 and LCMR in the TA platoon present the BCT with a unique force protection capability. These systems provide valuable intelligence on enemy mortar and rocket locations, and data from the Met and survey sections ensures that two of the five requirements for accurate predicted fire for the delivery of FA and mortar fires within the BCT are met.

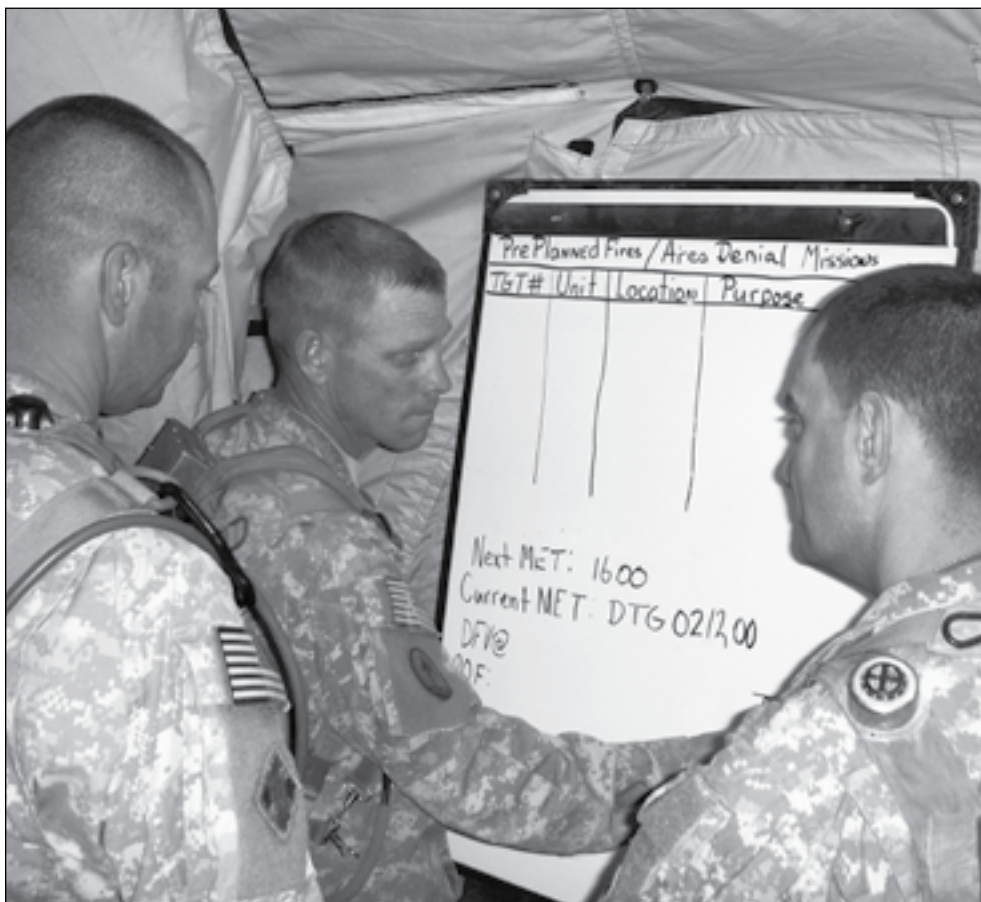
Although commanders still should use their 131As as their subject matter experts when it comes to TA radar systems, the TA platoon leader is also a manager and synchronizer of systems. He ensures those systems are in the best position to locate and destroy enemy indirect fire threats in support of the BCT commander's intent. Today's 131A must be a more dynamic and innovative thinker.

MOS 94M Radar Repairers are assigned to each Q-36 and Q-37 radar system by modified tables of organization and equipment (MTOE), meeting the organizational- and direct-support level maintenance readily available for these unique systems. So it is time to get out of the mindset that "the chief" or 131A needs to be with the radars physically; rather, position him where he can best affect the fight.

At NTC, we found that by using a TA platoon leader as a sensor manager inside of the BCT fires cell, performing the accompanying duties (see figure), places the 131A in a position that does affect the fight.

131A—Synchronizer. Organizations that use their TA platoon leader as a sensor manager working within the BCT fires cell often are successful in deterring and defeating the enemy indirect fire threat and the improvised explosive device (IED) threat. By working inside the fires cell, the TA platoon leader acquires a broader situational awareness of the indirect fire and IED threats throughout the operating environment.

This enhanced awareness enables the TA platoon leader to provide immediate feedback and make recommendations about the placement and orientation



CW2 James S. Outlaw (center), target acquisition (TA) platoon leader, 3rd Battalion, 16th Field Artillery, briefs SFC Michael S. Lanphear (left), fire support NCO and MAJ Terrence L. Braley, fire support officer, both of 2nd Brigade Combat Team (2 BCT), 4th Infantry Division (4th IN Div), 2 May. (Photo by MAJ John D. Williams, Fire Support Trainer, 2 BCT, 4th IN Div)

of the BCT's TA assets and sensors to identify, interdict and diminish these threats. He also can serve as the BCT fires cell representative to the countermortar, manpad, rocket interdiction (CM²RI) working group and can provide the BCT staff with analysis on recent indirect fire trends and patterns.

In this role and in partnership with the BCT collection manager, the TA platoon leader ultimately assumes a proactive role as the BCT sensor manager. He ensures that areas identified as indirect fire or IED hotspots are nominated and developed as named areas of interest (NAIs). He also assigns a sensor asset to observe these NAIs during times when indirect fire or IED attacks most likely will happen based on pattern analysis. The development of a target synchronization matrix is paramount, and the TA

platoon leader should be able to provide input into its development.

131A—BCT Asset. Having the TA platoon leader plug into the BCT fires cell and assume a role as a sensor manager also allows this individual to maintain a current status of the BCT TA assets. If the TA platoon leader physically was located with a Q-37 radar on a forward operating base and one of the BCT's LCMRs became nonmission capable, the TA platoon leader potentially would not have situational awareness of the LCMR's status for a couple of days. By serving in a sensor manager role in the fires cell, the TA platoon leader is in a better position to influence needed repairs or reallocations of BCT TA assets.

Added Benefits. Military decision-making processes or the continuous planning cycles consume the staff

members—the BCT fire support coordinator or fire support officer (FSO), the BCT assistant FSO and fire support NCO, and the targeting officer and targeting analyst—we have observed and worked with at the NTC. So, a TA platoon leader who has assumed the role of a BCT fires cell sensor manager can relieve the targeting officer of an extra duty by taking on the role of counterfire officer and assuming the CM²RI working group responsibility.

The addition of the TA platoon leader into the BCT fires cell provides opportunities for the unit to succeed due to the instant feedback from the 131A about sensor and radar management. Also, as a sensor manager, the TA platoon leader can influence any action that would or could impact his radars.

From our observations, the key is to have the TA platoon leader insert himself into the BCT fires cell and assume ownership for the CM²RI fight—those that do this are successful and help make the BCT successful.

- Performs necessary tactical and technical coordination for Field Artillery (FA) radars and data collection systems, including communications, security, force protection, positioning, logistics and administration.
- Serves as a sensor manager as needed; works with the collection manager to develop the target synchronization matrix to include TA radars and unmanned aerial systems.
- Maintains a status of FA TA radars and data collection systems; informs the commander and counterfire officer when necessary.
- Advises the commander and staff on the technical considerations affecting the employment of TA radars and recommends the general locations of radar sites and search azimuths.
- Monitors the mission support requirements of all TA radars and data collection assets within the supported area.
- Assists the radar section chief in the reconnaissance and selection of radar sites as needed.
- Commands and directs the TA platoon's operations and associated equipment.
- Reviews and consolidates requisitions for tools, repair parts, technical supplies and equipment.
- Examines, writes and interprets standing operating procedures, orders, directives and technical publications for data pertinent to employment of radars and data collection assets.
- Inspects maintenance of platoon vehicles and equipment.

Additional duties:

- Serves as the conduit that links the BCT counterfire effort with trend and pattern analysis conducted alongside the S2.
- Serves as the BCT counterfire officer within the BCT fires cell and is linked digitally to the counterfire cell at division level.
- Develops and maintains the counterfire and indirect fire database within the BCT fires cell.
- Helps the BCT intelligence analyst and S2 in developing indirect fire products for use during the targeting working group and targeting meeting.
- Serves as the primary manager of both lethal and nonlethal organic collection assets.

Proposed target acquisition (TA) platoon leader duties. The TA platoon leader supervises the activities of the TA platoon and serves as the key integrator and synchronizer of the fires battalion TA assets into the brigade combat team (BCT) commander's scheme of maneuver.

Chief Warrant Officer Three Michael V. Murray, Field Artillery (FA), is the Senior Radar and Targeting Observer/Controller (Wolf 36) at the National Training Center at Fort Irwin, California. He served as the Joint Fires and Effects Targeting Officer for the Southern European Task Force (SETAF) for the Combined Joint Task Force- (CJTF)-76 during Operation Enduring Freedom VI. He also served as a Q-36 Radar Section Leader for 1st Battalion, 10th Field Artillery, and as the Brigade Targeting Officer during Operation Iraqi Freedom, all in the 3rd Brigade, 3rd Infantry Division, at Fort Benning, Georgia.

Major John D. Williams, FA, is the Brigade Fire Support Trainer (Bronco 27) at the NTC. In his previous assignments he has served as the Airborne Battalion Fire Support Trainer (Tarantula 27) at the NTC; the Battery Commander for C Battery, 3-7 FA, 3rd Brigade Combat Team (BCT), 25th Infantry Division, during OEF; the Battalion Fire Direction Officer for 3-320 FA, 3rd BCT, 101st Airborne Division, during OIF. He is a graduate of Texas A&M University.

Warrant Officer One James R. Smotherman, FA, is the TA Platoon Leader for 4-1 FA, 3BCT, Fort Riley, Kansas. He has deployed three times in support of OIF with 2nd BCT, 10th Mountain Division, Fort Drum, New York, serving as a Motorized Rifle Squad Leader and Platoon Sergeant. He also has served in numerous cannon crewmember positions throughout his 14 year career.



Czech Army Field Artillery —Developing the Future Automated C² System

Currently, the use of artillery in combat situations is undergoing rapid change. Major emphasis now is being placed on the distance and accuracy of fire, the blast effect on target and the timeliness of calls-for-fire. These rapidly evolving new requirements place new demands on the combat arms capabilities of the Czech Army artillery resources—especially our command and control (C²) systems because these systems dramatically affect the time-on-target and resulting accuracy of fires. Accordingly, developing a new automated fire-control system for the Czech military is a critical element in our ongoing military modernization program.

The present Czech fire direction system, Aspro, does not comply with modern warfare requirements. Therefore, the Czech Army has established an “artillery working group” both to define the requirements for a new automated C² system and to develop an appropriate replacement for the current mechanisms.

By Lieutenant Colonel Josef Vondrák
and Colonel Ladislav Potužák

The group identified three possible variations of development. The first possibility is to upgrade the current C² system software. The second possibility is to modernize the current system and simply add on some new fire-control mechanisms. The third, and the most drastic, option is to develop an entirely new artillery C² system. The nature of the future system will be determined by the comparison between the capabilities of the existing systems and future requirements.

Ultimately, the political and military goals of the Czech Republic, the government’s financial resources and the future artillery requirements of the Czech Army will be the basis for the formulation of our automated system of C² requirements. In the analysis, the future automated system of C² requirements can be separated into seven main sections (see Figure 1).

Command, Coordination and Fire Direction Center. All future fire direction centers (FDCs) controlling multiple artillery units will be equipped with the upgraded automated system of C² assets.

In an artillery unit’s firing position, these elements will consist of an FDC of a mixed artillery battalion (multiple

- Command, Coordination and Fire Direction Center (FDC)
- Configurations of System and Structure
- Automated System of C² and Modernization of Artillery
- Automation
- Command
- Fire Direction
- Data Transmission within the System

Figure 1: The future automated system of command and control (C²) requirements can be separated into these seven main sections.

Lieutenant Vratislav Knot, 131st Combined Artillery Battalion, takes readings while the self-propelled gun howitzers, 152-mm type 77 (SPGH-M77 "Dana") of his platoon prepare to fire during Strong Campaigner 2006, Hradiště military training area, Czech Republic. The exercise is designed to help meet the goals of the Reform of Armed Forces of the Czech Republic. (Photo courtesy of Czech Republic Ministry of Defense and Lieutenant Colonel Josef Vondrák)

systems in the unit), a command post (CP) of mixed artillery battalion and a battery FDC. All artillery reconnaissance centers will be equipped with an automated system of C² assets, including artillery reconnaissance squads, technical reconnaissance squads and radar reconnaissance squads (see Figure 2). Another FDC element will provide C² of artillery units and artillery fire for meteorological squads, survey groups and Multiple-Launch Rocket System (MLRS) meteorological watches. Finally, separate survey, meteorological, logistic, medical, veterinary, combat support elements and nuclear, biological and chemical (NBC) also will be linked into the automated system of C² network.

In the future, these automated system of C² capabilities will be concentrated in the CPs of the various task forces, such as battalion fire coordination centers (see Figure 3 on Page 34), brigade fire coordination centers (see Figure 4 on Page 35) and division fire support coordination centers (see Figure 5 on Page 36). The automated system of C² must oversee the missions of tactical and reserve CPs.

The proposed system also will have to process reconnaissance data from unmanned aerial vehicles and other reconnaissance sources, such as deep reconnaissance squads, and then re-transmit these data to battalion FDCs and battery FDCs.

Configurations of System and Structure. The mixed artillery battalion will be the main fire support resource for the brigade commander, and its function will be controlled by the fire coordination group. Therefore, the future configuration of the automated system of C² must provide command and fire direction for the mixed artillery battalion at the brigade level. The future system will be capable of providing these resources for up to three artillery batteries and one MLRS battery.

The lowest tactical elements requiring such fire support are the reconnaissance squads, technical reconnaissance squads and radar reconnaissance squads, which are controlled by the commanders to whom they are assigned. The automated system of C² at the battalion fire coordination center must be able to communicate with the brigade fire coordination center,

battalion FDC, battery FDC and the assigned artillery reconnaissance assets. In the future, the automated system of C² also will be connected with the fire direction system of mortar units.

The most important capability at the brigade level will be the direct connectivity between the brigade fire coordination centers and battalion FDC. This, in turn, will control the actions of the battery FDC and will permit integrated C² of the assigned artillery reconnaissance assets (see Figure 4).

The future automated system of C² must provide connectivity between the brigade fire coordination centers and the division fire support coordination centers (see Figure 5). This system will permit command of all battalions (mixed artillery battalions and an MLRS battalion) either via the brigade fire coordination centers or directly. The proposed system also must permit the division fire support coordination center to communicate with the artillery reconnaissance assets subordinated to the division commander.

Because of the different organizational options created by mixed artillery and MLRS battalions, the automated system of C² systems will have the built-in flexibility to provide C² for up to three MLRS batteries in the battalion.

The automated system of C² also must be flexible enough to alter its configuration quickly to conform to the actual combat formations the commander requires. Fire control centers will communicate with either all or only some of the other FDCs, depending on the particular artillery assets reinforcing the task force at the time.

In sum, the new system must be prepared to function in all aspects of combat, including battalion movement, unit dislocation and all activities.

Automated System of C² and Modernization of Artillery. After modernizing and modifying its artillery to a NATO standardized caliber, Czech Army artillery will be able to fire at extended range and simultaneously use current ammunition with enhanced effect in target. These fires will be more accurate and be able to use more types of shells with lethal and nonlethal effect. These evolving factors will affect both the Czech Army artillery's combat-use policy and the tactics of its artillery units and formations.

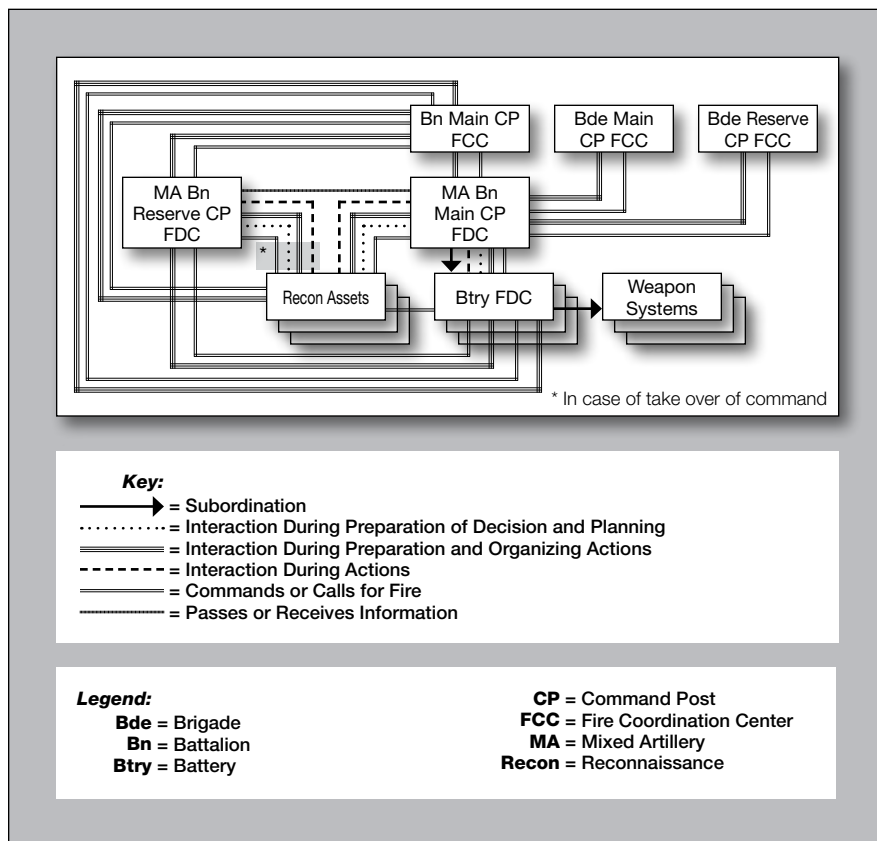


Figure 2: Mixed Artillery Battalion FDC

The proposed automated system of C² will have to provide reliable data transmission over longer distances than presently required. Depending on the width and depth of the task force defense area, this could require communications across 15 kilometers or more. This will require the automated system of C² to have an extremely long-range communication capability, including reliable data transmissions throughout all conditions, such as adverse weather, magnetic anomalies and other communication transmission difficulties. In brief, the new automated system of C² will have to be extremely robust to operate reliably throughout all of these regimes.

In addition, the future automated system of C² will have to enable our artillery units to fire from widely dispersed fire positions. Therefore, the automated system of C² will have to calculate each individual tube's position grid quickly and then calculate the appropriate firing data for each gun separately. A centralized battery system then will determine target data, and a gun system will calculate its own aiming point, including individual gun corrections.

Simultaneously, a common batterywide system will calculate firing data for each gun and then automatically compare its firing solution to that of the individual gun. This centralized oversight capability will permit the battery gun commander to identify errors committed by the individual gun crew and/or to transmit firing data when the individual gun system is out of order.

Finally, the new system must be designed to accommodate the inevitable upgrades that will be required by new innovations, weapons systems, ammunition, maps, etc.

Automation. The Czech future automated system of C² will be automated

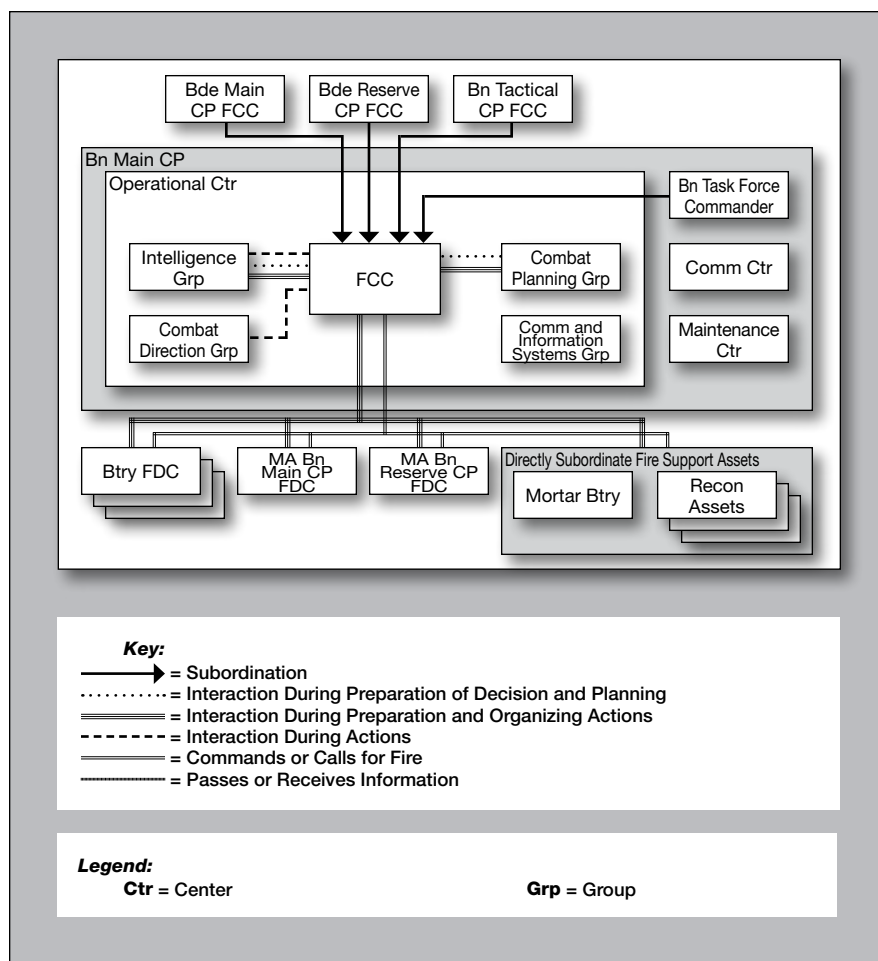


Figure 3: Elements and Structure of Battalion-level Fire Support System

sufficiently so that human operators will have to intervene only in unusual situations. In normal situations, the system will have to receive enough input information to enable it to select the optimal solution adequately from a variety of options. As advanced as the new system will be, however, only a human operator will be able to authorize a final option or firing solution. In an unusual situation, the operator could make corrections and

supervisors could order corrections, but generally the system should be able to function autonomously.

As envisioned, the new automated system of C² will serve as both a source of raw information and a provider of decision-options for the commander. The system will obtain this information from a variety of human sources (orders, ordinances and reports) as well as obtain data automatically from other systems (such as meteorological squads, survey groups, artillery reconnaissance systems, combat vehicle information systems and operational tactical systems) via the common networking system. Therefore, a fundamental requirement of the proposed automated system of C² is that it must have the capability of sending and receiving data from other automated systems on the battlefield without relying only on manually-inserted information.

RM-70s of the 131st Combined Artillery Battalion fire rockets on the Hradiště military training area, Czech Republic, October 2007. (Photo courtesy of Czech Republic Ministry of Defense and Lieutenant Colonel Josef Vondrák)



A *Sněžka*, a reconnaissance set, conducts an artillery observation mission in the Boletice military training area, Czech Republic. (Photo by MAJ Martin Sufajzl, Department of Fire Support Control, University of Defense in Brno, Czech Republic)

Command. The automated system of C² systems will provide fire coordination for both Czech battalions and batteries. This requirement exists because the system must have actual data from valid orders, ordinances and reports to provide the commander with appropriate options. The future automated system of C² eventually will demand complete combat documentation so that it can extract the required data without an operator's help. To satisfy this requirement, it will have to have a seamless connection with all of the other automated centers in the networked system.

Once the automated system of C² is connected to these other sensors and reporters, it automatically will provide the commander with the data and options he needs to select the appropriate firing solution or tactical deployment. This capability will enable the commander

to make swift, coordinated and coherent decisions for initiating combat actions, troop movements, arranging logistic support, etc.

The future system also will need to have the capability of producing a graphic output or combat overlay that will give the tactical commanders a map depicting the current disposition of friendly forces, enemy units and other important conditions.

The proposed automated system of C² will be able to provide secure data transmissions from company to brigade levels as well as from sensor to weapon systems. Today, the data transmission between these levels is provided by our Combat Vehicle Information System and Operational Tactical System, while the Aspro system provides data between the fire coordination centers. This currently requires a dual-transmission



system, so we now must decide if we want to retain this duality feature as a requirement for the new automated system of C².

Fire Direction. The future system will be able to function as a stand-alone fire-direction system. In that capacity, it will exchange and share data among all the different fire direction elements of the mixed artillery battalion and its separate batteries.

Of course, the system also will have to provide permanent storage of all this data, for example, data from firing tables, guns data and so forth. In addition, it simultaneously must ensure a continuous data flow to the commander to provide him with fully integrated information to facilitate his combat planning or action. The system's capabilities to compute firing data automatically are in agreement with other requirements.

Data Transmission within the System. This system, except for the other described tasks, also will ensure communications connections among the other system elements too. To accomplish this, it will be necessary to insert a precisely defined connection net into the system. The connection net first will have to identify all the network elements. In addition, it will be necessary to assess which document (command, order, ordinance, report, etc.) must be sent to which particular workplace. Simultaneously, it will be important to identify certain deputy officers or workplaces in the system in case a primary commander or workplace will be out of order. Ultimately, the transmission

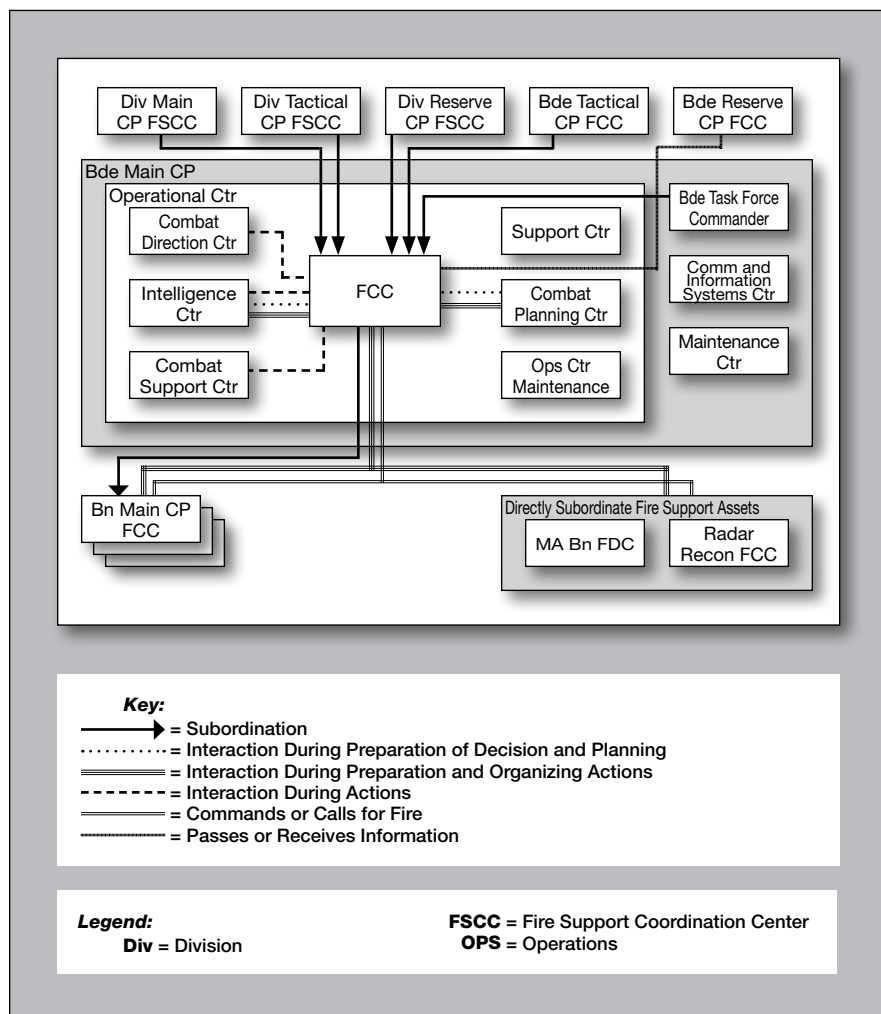


Figure 4: Elements and Structure of Brigade-level Fire Support System

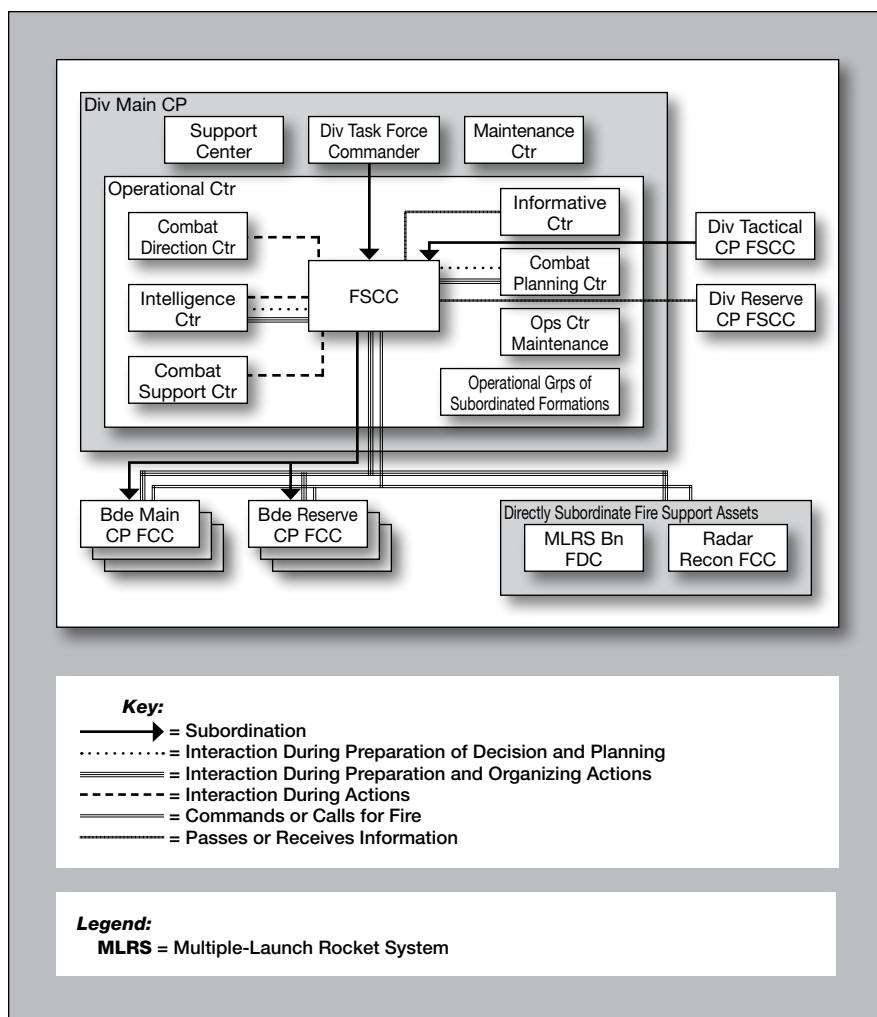


Figure 5: Elements and Structure of Division-level Fire Support System

system must transmit data reliably to all recipients within the required range in all conditions and automatically confirm whether or not the data/message was received. The system, as designed, will issue a confirmation automatically after the intake operator (the receiver) processes the message.

Fundamentally, the automated system of C² must ensure the safe, reliable and confidential transmission of data throughout the system.

Accurately identifying and certifying the base requirements for the automated system of C² will facilitate its optimum functionality and ensure the more effective execution of fire support in the Army of the Czech Republic. The automated system of C² accelerates activities which an operator would make routinely, but

will still allow the human element to solve a problem creatively.

The accurate determination of these system requirements is the beginning of

a solution. Accordingly, it will be necessary to specify the maximum number of details at all levels. A final realization of the new automated system of C² will be the result of a cooperative effort among members of the Department of Fire Support Control of University of Defense, future users and experts from the technical institutes.

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Colonel Ladislav Potužák is a Professor of Military Science for the University of Defense in Brno, Czech Republic. He also served as Vice Dean of Research and Deputy Chief of the Department at the Military University of Ground Forces in Vyškov and as Group Head and a Lecturer at the Military Technical College in Martin, Czech Republic. He also has served in command positions with tactical units for the Army of the Czech Republic. He is a graduate of the Higher Artillery Training Center in the town of Martin and the Military University in the town of Brno.

SPGH-M77s, 131st Combined Artillery Battalion, fire during Strong Campaigner 2006 at Hradiště military training area, Czech Republic. (Photo courtesy of Czech Republic Ministry of Defense and Lieutenant Colonel Josef Vondrák)





The Fires Brigade—A Critical Capability in an Era of Persistent Conflict

SGT Shane D. Nickell, C Battery, 1st Battalion, 14th Field Artillery Regiment, 214th Fires Brigade, supervises the positioning of a launcher during certification on the unit's newly acquired High-Mobility Artillery Rocket System (HIMARS) on Fort Sill, Oklahoma, 30 May. (Photo by Jerry Bryza Jr.)

The Army's Field Artillery (FA) Soldiers and units are engaged around the world. From Korea to Iraq, from Afghanistan to the Horn of Africa, Artillery Soldiers are providing lethal and nonlethal fires, manning radars, delivering supplies, securing convoys, staffing command posts, conducting patrols, safeguarding facilities, helping our allies build capacity, regenerating battalions and any number of other critical traditional and nontraditional tasks. Artillery units have become the Army's "switch-hitters" of choice for those missions because of their *functional adaptability and multifunctional capability*.

Despite these successes, changes created by persistent conflict, the unanticipated effects of modularity and the Artillery's expanded skill sets have placed a strain on the Artillery force. The Artillery is "out of balance" and is not postured for the future—there are *capability gaps* in the formation. Eliminating a senior Artillery headquarters' relationship and responsibility has created inadequate training and readiness oversight (TRO)

By Colonel Samuel R. White Jr., FA

for the Artillery and fires system within brigade combat teams (BCTs).

In addition, a combination of reduced force structure and piecemeal commitment of fires brigades into the current fight has left insufficient force field Artillery headquarters (FFA HQ) to support divisions and corps. Lastly, the era of persistent conflict also reinforces the requirement for right-sized and multifunctional headquarters that are capable of coordinating lethal and nonlethal actions across the spectrum of conflict.

Capability Gap. In the past, the division Artillery (Div Arty) and the corps Artillery filled both the TRO and FFA HQ roles. When the Div Arty and corps Artillery formations were removed from the Army structure, these requirements still existed—but a replacement capability was *not developed*. It was assumed that BCTs could provide sufficient TRO for their organic fires battalions and that a limited number of fires brigades could function as an FFA HQ for a greater number of

divisions, corps and joint headquarters. Operational experience is revealing that these assumptions were not valid.

These capability gaps are beginning to have consequences across the operational force. Observations from the combat training centers and a recent Rand study on core skills competency reveal a marked decrease in fire support proficiency within BCTs. BCT and division commanders highlight the lack of an oversight and training capacity for fires battalions as the key contributing factor to the loss of proficiency in fires battalions and the key component in rebalancing the Artillery.

Repetitive deployments conducting nonstandard missions have left most Artillery battalions untrained in their core tasks and drills—at both the individual and collective levels. A generation of junior and mid-level officers and NCOs has almost no experience in their FA duties. There are S3s who executed only nonstandard missions as battery commanders and battery commanders who have not fired an artillery round since their officer basic courses.

In the past, a senior Artillery commander and his staff would provide the experience and capacity to train these battalions. This is not possible now, and the experience drain has rendered many fires battalions severely crippled in reestablishing lethal core competencies—or “healing” themselves.

Division and corps commanders’ observations highlight the importance of an FFA HQ in their operations. An FFA HQ ensures seamless fire support for divisions and corps (and Marine expeditionary forces or MEFs) and synchronizes lethal and nonlethal fires across their formations.

Typically a division is deploying with five to seven BCTs. Division commanders want an FFA HQ to turn to for fires synchronization across their areas of operation (AOs). While it was assumed Fires brigades would fill this role, the supply of Fires brigades neither is adequate nor postured properly to meet this demand. This capabilities gap is an unanticipated effect of modularity.

Adaptable and multifunctional organizations like fires brigades give the joint force commander a core lethal and nonlethal fires capability when he needs it...

Force Limitations. There are only enough fires brigades in the Army structure to allocate one to each division committed to major combat operations. Current operations in theater, however, require an FFA HQ to ensure synchronization of the myriad of widely dispersed fire support assets in a division’s AO—across the full spectrum of operations. All division commanders deploying to Iraq have requested this capability, and MultiNational Corps, Iraq has urged every division to deploy with a fires brigade—for the FFA HQ capabilities as well as the multifunctional headquarters capability.

From a force structure perspective, this is not possible. The current fires brigade operational tempo indicates that the Army does not have the capacity to sustain the enduring fires brigade requirements with the current resources. Every fully fielded brigade, active and Army National Guard (ARNG), is committed decisively to the fight or is on a deployment order. There are no reserve fires brigades.

Compounding this challenge, fires brigades are being dissected and deployed in pieces. Battalions, batteries and platoons routinely are separated from their parent modular organizations and deployed

with another headquarters, while the fires brigade headquarters is split up to augment other brigade, division or corps headquarters. In some instances, brigade and battalion commanders are deployed without their brigades or battalions or their units are split up and deployed without them. The net result is that even though an entire brigade’s worth of *capacity* is being deployed, the combatant commander is not gaining a brigade’s worth of *capability*; and there are no fires brigades available to help division and BCT commanders as an FFA HQ.

Apart from the obvious impact on sustaining the current fight—we are consuming brigades faster than they can be regenerated—fires brigade commanders are hard-pressed to develop their own trained and ready units for the long term. For example, one fires brigade is or soon will be deployed in platoon and battery-sized units, and the brigade commander and a portion of the staff is deployed already in support of another headquarters.

Ensuring this brigade’s Soldiers are prepared adequately to execute their missions is a challenge now and in the future. Even if no further deployment orders are received by any elements of this brigade, the commander still will not have his entire organization together to begin retraining until June of 2010.

Increasing the Capacity. The demand for Fires brigades looks to remain high for at least the next 10 to 15 years in the current strategic environment. Adaptable and multifunctional organizations like fires brigades give the joint force commander a core lethal and nonlethal fires capability when he needs it and the flexibility to apply the fires brigade against a range of brigade missions with a more efficient footprint than a BCT. To realize these capabilities, the Army must increase its capacity to generate Fires brigades. This requires a two-pronged approach.

Increasing the Number of Fires Brigades. The Army must increase the inventory of active component fires brigades from six to 10. It is time to revisit our force structure assumptions based upon the requirements of an era of persistent conflict. Currently, the Modular Support Forces Analysis and Grow the Army initiative identify the need for one ARNG and one active Fires brigade to support the rotational base (ongoing operations). The actual rotational

requirement is much higher.

At present, seven fires brigades are deployed in some capacity. As a consequence, the number of fires brigades available to meet the Deter, Major Combat Operations and Strategic Reserve missions is reduced significantly and will remain so for the long term. Adding three additional active fires brigades to the Army’s structure would allow the Army to meet a sustainable Fires brigade demand—four per year (three active and one ARNG)—during an indefinite period of time, reconstitute the strategic reserve and provide a sustainable FFA HQ capability to division commanders as well as a regional command and control capability to joint commanders.

A tenth active component fires brigade could provide a forward-based, nonrotational fires brigade. The requirement for detailed knowledge of the friendly and enemy situations, a complex environment that demands continuity during the long term and the need for a developed working relationship with host nation forces are strong reasons for maintaining a forward-based fires brigade.

There is no need to include rocket battalions as part of the increase in structure; the organic rocket battalion in the brigade can be supplied from the existing force pool of rocket battalions. The four additional fires brigades should include only the brigade headquarters, brigade support battalion, signal company and target acquisition battery—a total of approximately 635 personnel per brigade. The unmanned aircraft system (UAS) unit is not resourced at this time and would be allocated based on plans and missions (Figure 1).

Employing the Fires Brigade as a “Package.” As an essential component of the Army’s long-term rotational strategy, the Army must establish fires brigades in Army Force Generation (ARFORGEN). Generating and deploying Fires brigades as part of an ARFORGEN force package, rather than in pieces spread out over time, provides a sustainable capability and is the most efficient use of a modular unit. This allows fires brigades to develop and maintain established TRO relationships with divisions and BCT commanders as well as support theater commanders with a right-sized regional headquarters—generating the best capability for the supported commanders.

Critical Capabilities. An inadequate supply of Fires brigades and a nonmodular approach to Fires brigade employment has induced significant risk to predictable,

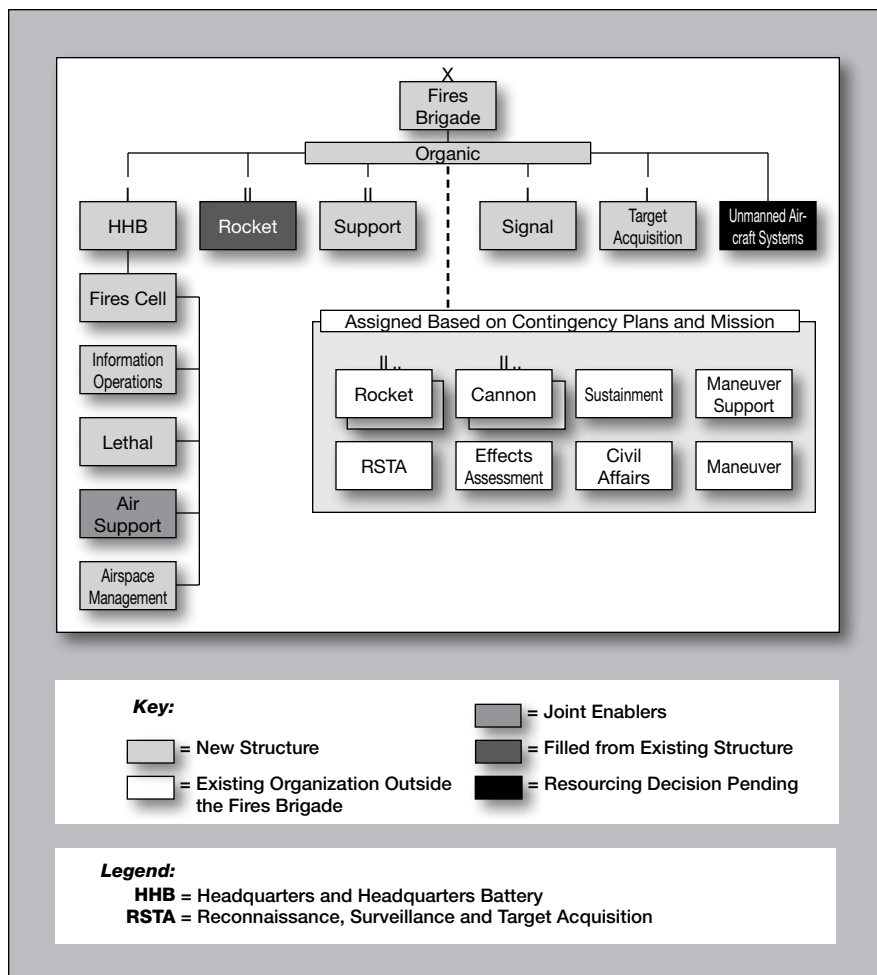


Figure 1: Tailored Fires Brigade

long-term readiness and created capabilities gaps for the force. Fires brigades provide critical capabilities that can rebalance the Artillery (close the gaps) and set the conditions for the future.

Senior Artillery Command HQ. A senior Artillery command HQ is needed to help division and BCT commanders regenerate trained and ready, lethal and nonlethal fires capabilities. The complexity and scope of providing TRO for fires across a division and inside BCTs requires the experience and resources of a senior Artillery commander and his staff. An unintended consequence of modularity is that our Army lost this capability.

Our fires battalions are organic to our BCTs, and there is little capacity or capability within the BCT for self-assessment of the fires system. Our BCT commanders are not trained and do not have the expertise to provide training oversight of a fires battalion because modularity assumed that the fires battalion commanders would be capable of training and certifying their battalions without outside help. In some instances, this is

proving to not be the case.

After almost five years of executing nonstandard missions, it is likely that within the next year some of our battalions will be commanded by officers who may have never performed Artillery tasks as an S3 or executive officer. The same holds true for battery commanders—their first day in a firing battery could be as the battery commander. Predictably, this lack of core competency experience at the battery and fires battalion level introduces risk into our BCTs.

Fires brigades can mitigate some of this risk. The fires brigade commander can help the BCT commanders certify their fires battalions and apprise them on the readiness of their fires systems. The fires brigade commander can mentor fires battalion commanders' execution of their duties and provide much needed technical oversight in support of the BCT commander.

Across the division, the fires brigade commander can help the division commanding general establish training and certification standards for the division

fires systems—and then help assess the state of training. He can be the BCT and division commanders' eyes and ears for lethal and nonlethal fires.

While there is a colonel authorized on the division staff as the fire support coordinator—sometimes filled by a lieutenant colonel—he does not have the necessary expertise on his staff nor sufficient numbers to leave required duties to oversee training on a routine basis. Further, the staff officer is disadvantaged when implementing changes because he lacks the commander-to-commander “opportunities” to help the BCT commanders train their fires battalions.

Division commanders see the need for a fires brigade to support their operations and desire a training and support relationship with a fires brigade. They actively are tapping into Fires brigades now to help train their fires battalions and cells before deploying and to regenerate them once they return—but there simply are not enough fires brigades to meet the demand. Without additional fires brigade capability to help them, division and BCT commanders have limited options in regenerating Artillery core competency in their organizations.

Division commanders also want to deploy with a fires brigade when they go to Iraq. They note that fires brigades would be their “ace in the hole”—a responsive precision capability and an adaptable organization well-suited for the variety of stability tasks that BCTs are performing. The fires brigade gives division commanders options.

An FFA HQ. An FFA HQ helps plan, coordinate and execute precision lethal and nonlethal fires for divisions, corps, MEFs and joint and combined force commanders. The fires brigade is designed to integrate and execute joint lethal and nonlethal precision fires across a supported commander's AO (300 kilometers x 300 kilometers). It has a rocket and missile battalion, support battalion, signal company, target acquisition battery, UAS capability and a robust command and control structure. These organic capabilities permit the fires brigade to be the commander's “one-stop shop” for lethal or nonlethal fires integration and application and provide a menu of capabilities across multiple mission sets.

A fires brigade permits maneuver commanders to be extraordinarily agile and flexible. The brigade's responsive precision fires provide support when needed and allow the supported commander to deploy fewer forces across a

wider area. As forces are withdrawn from theater, the need increases for immediately responsive precision protection for those dispersed forces that remain. This also includes protection from enemy indirect fires.

If employed as a unit, the fires brigade can integrate fires requirements for multiple operating bases and outposts and serve as the indirect fire protection (counterfire) headquarters for a division or corps, providing training and operational oversight for dozens of counterfire radars and counter-rocket, -artillery and -mortar (C-RAM) systems and tying them into a divisionwide or corpswide effort—a capability that does not exist in theater currently.

The fires brigade also addresses a current theater operational need for responsive indirect fires for combat support (CS) and combat service support (CSS) units. These units do not have organic indirect

fires yet routinely require support as they make contact with insurgent forces. The Fires brigade can execute the precision fires for the CS and CSS units and provide planning and coordination for other joint fires in support of CS and CSS units without a fire support element.

Additionally, the fires brigade can be tailored with a variety of systems—rocket and cannon, Excalibur and guided multiple-launch rocket systems, electronic warfare and UAS—to provide the right capability to the right unit. In essence, using UAS and a variety of fires systems, both lethal and nonlethal, a fires brigade could provide precision overwatch of CS and CSS elements as they man checkpoints, conduct convoys, repair roads and any number of tasks that require a rapid and precise response.

A fires brigade in theater also allows “flattening” of the lethal and nonlethal fires process. Because there is no fires

brigade in Iraq operating as such, all deploying divisions and corps increase the size of fires cells and fire support elements in their headquarters to account for the tasks that a fires brigade would doctrinally accomplish, routinely adding dozens of additional personnel to the staff. Consequently, each division or corps HQ conducts planning and execution tasks which should be performed by a fires brigade—most notably, FFA HQ, counterfire headquarters and detailed lethal and nonlethal targeting and execution.

By transferring these functions to a fires brigade, one organization can develop the target, plan and execute reconnaissance, surveillance and target acquisition, conduct coordination, synchronize the execution, exploit the success and assess the effect—all from a single headquarters with significant targeting expertise and understanding of lethal and nonlethal fires integration.

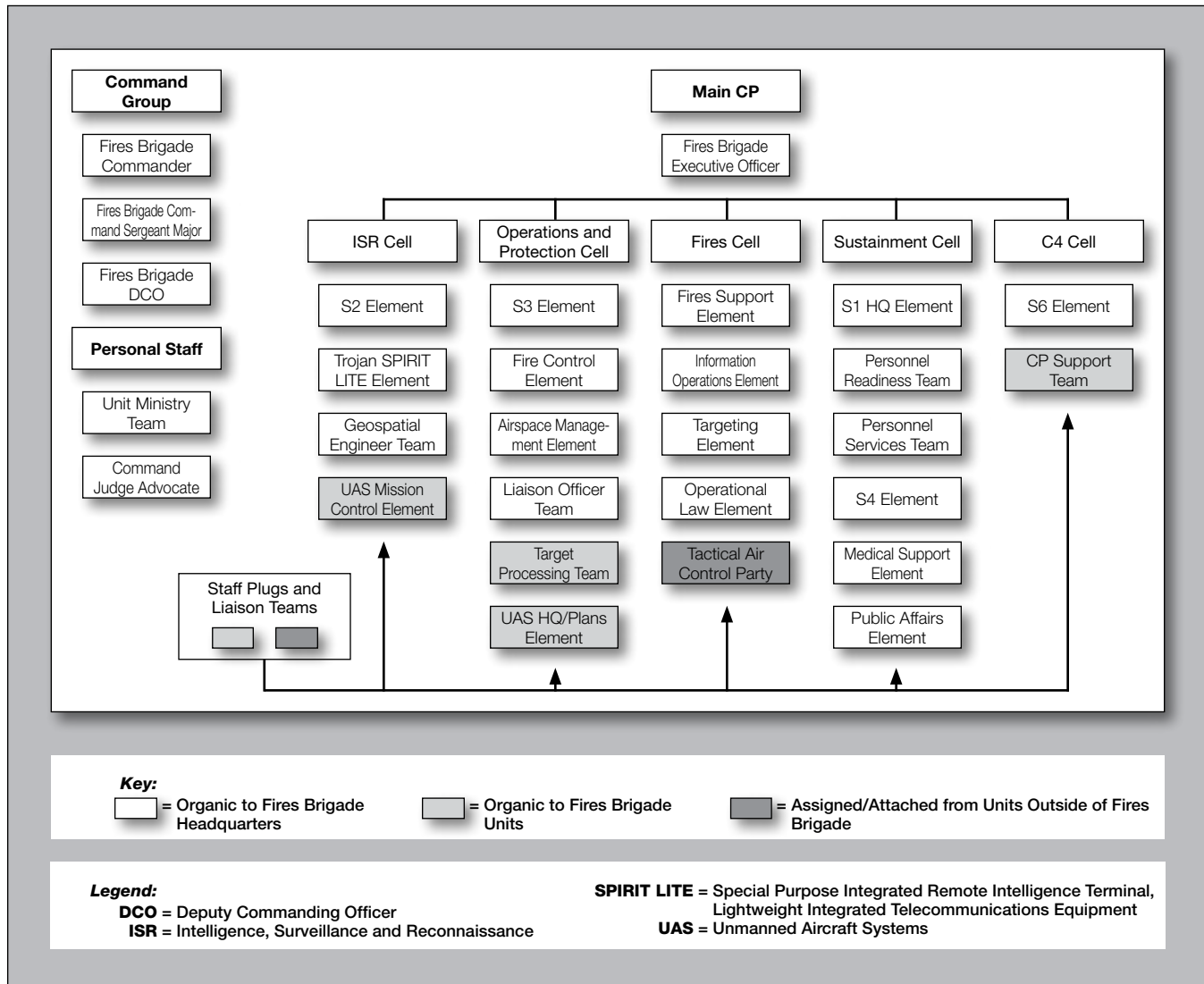


Figure 2: Fires Brigade Command Post (CP)

A Regional HQ. The fires brigade's multifunctional staff, integrated battle command, efficient footprint, significant sustainment capabilities and nonlethal expertise make it well-suited for accomplishing regional stability missions. In current operations, as Iraqi Forces assume greater responsibility for their own security, it is likely we will withdraw BCTs and eventually divisions from Iraq and replace them with regional stability headquarters. These headquarters will work with provincial reconstruction teams (PRTs)—similar to those operating in Afghanistan. The fires brigade staff structure is a valid blueprint for these regional stability HQs. The brigade staff structure is robust, multifunctional and expandable enough to interact with a number of PRTs. Because of its personnel's experience and familiarity with coordinating joint and combined fires across many echelons, its staff is very capable. If necessary, the fires brigade also can coordinate and execute lethal and nonlethal joint fires *in support* of joint or coalition operations. It was designed to have the systems in place to coordinate nonlethal activities across multiple headquarters and integrate these activities with joint headquarters and multinational partners (Figure 2).

Fires brigades are executing these very missions in the current fight with tremendous success. In one instance, a Fires brigade HQ with 20 subordinate units is partnered with a 30-person PRT to help the Iraqis build essential capacities in their region. Unlike BCTs, who concentrate their efforts on a particular town or portion of a city, the Fires brigade and its partnered PRT are focused more broadly, building *regional* security, governance, finance, medical, infrastructure and essential services capacity.

This fires brigade has leveraged its regional (division and corps) fires integration expertise to develop regional capacity nonlethal actions integration expertise. The fires brigade commander and the rest of his brigade staff have been *culturally programmed* to be very effective in this environment. The fires brigade commander understands the cause and effect of the multitude of activities across the region because he has spent his career managing, integrating and assessing lethal and nonlethal effects as a fire supporter.

The fires brigade structure also is well-suited to provide the right-sized force for a variety of stability missions. In support of the peace engagement, the organic rocket battalion can put enough boots on the

ground to provide a visible presence in the AO without supplanting local authority or enforcement. Integrating the fires brigade into the ARFORGEN cycle would allow the battalion to train for this mission. The brigade HQ can function as a Military Area Command for geographic regions and can easily receive additional units and capabilities as the mission demands.

In support of stability, reconstruction or humanitarian assistance efforts, the organic forward support battalion can provide almost 100 trucks in support of regional reconstruction programs—including fuel and water support. The brigade support battalion can receive any number of additional sustainment capabilities. A robust signal capability is expandable to allow to the fires brigade to establish multiple points of effort for reconstruction or humanitarian support, allowing communication with a multinational HQ as well as provide reach-down capability to reconstruction or relief teams.

The network operations section in the brigade S6 manages the network, giving the Fires brigade the ability to expand the network as new teams join and new communications capabilities are added. The brigade can use UAS to help extend the situational awareness of the brigade, providing overwatch of the relief teams and helping in relief or reconstruction efforts in remote areas.

For current operations, as we continue the transition process in Iraq, fires brigades should be an integral part of the Army's solutions. They are being studied now as enduring solutions to the enduring regional headquarters requirement because they are suited for a variety of missions that no other brigade can perform—specifically, as a headquarters integrating lethal and nonlethal capabilities to facilitate stability, governance, essential services, and coordination in support of nongovernmental organizations.

They are performing these missions in theater right now with resounding success. To ensure these requirements are met with the right capabilities, ARFORGEN should transition to match force generation with required capabilities. In an environment where deployment numbers are scrutinized continually, a fires brigade will emerge as a tailor-made and cost-effective capability. With less than one-third the personnel footprint of a BCT, it can provide capabilities needed and enable BCTs the opportunity to train their forces and prepare for more suitable BCT missions.

Fires brigades can be integral enablers for the modular force. They are battle-tested in the current fight and are proven effective. Commanders want fires brigades in their formations; division commanders want them as FFA HQ to train and synchronize the fires for their division and BCTs; and theater commanders view them as a viable solution to a regional headquarters as forces draw down in Iraq.

Fires brigades can be integral enablers for the modular force.

Fires brigades provide three critical capabilities for the Army and close existing capabilities gaps—a senior FA commander to advise the maneuver commanders on fires application and training, an FFA HQ for synchronization of lethal and nonlethal fires, and an enduring right-sized capability for regional stability missions.

These capabilities meet warfighter's needs today and will continue to do so in the future—but supply must meet demand. As the Army grows, its fires brigade capacity must grow as well. The Army must ramp up its ability to generate brigades by increasing the number of active fires brigades to 10 and integrating fires brigades into ARFORGEN as an essential component of the Army's long-term rotational strategy. Doing so will generate a critical capability demanded by operational commanders to meet current and emerging requirements in Iraq.

Fires brigades will be a foundational capability in posturing the Army for enduring success in an environment of persistent conflict.

Colonel Samuel R. White Jr., Field Artillery (FA), is the Acting Chief of Staff for the Fires Center of Excellence and Fort Sill, Oklahoma. Also at Fort Sill, he was a Futures Concepts Integration Officer in the Concepts Division of the Futures Development Integration Center (FDIC), and he commanded 1st Battalion, 30th FA Regiment, part of the Field Artillery School. While in the 4th Infantry Division at Fort Hood, Texas, he served as the Division Artillery S3; Chief of Operations, G3; and a Battalion Executive Officer. He also served in a variety of assignments at the National Training Center at Fort Irwin, California, including as a Brigade Fire Support Trainer. During Operations Desert Shield and Storm, he commanded the Howitzer Battery of the 2nd Squadron, 2nd Armored Cavalry Regiment, out of Bamberg, Germany.

Fires

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PFC Nolan R. Laughlin and SPC Timothy S. Blair, A Battery, 2nd Battalion, 11th Field Artillery, 2nd Stryker Brigade Combat Team (2 SBCT), 25th Infantry Division (25 ID), MultiNational Division, Baghdad, load an Excalibur round into an M777 on Camp Taji, northwest of Baghdad, 26 April, as other Soldiers of the battery look on. The Excalibur round fired was the first round of its type fired by 2 SBCT while deployed in support of Operation Iraqi Freedom. (Photo by SPC Derek Miller, 2 SBCT, 25 ID)

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